

SECTION 4.0

ENVIRONMENTAL CONSEQUENCES

4.1 Project Impacts for Each Alternative

4.1.1 Land Use Impacts

Impacts to Existing Land – The majority of the land in the area, through which this section of US 2 passes, is used for agricultural purposes. Each build alternative will effect the current land use adjacent to this project. Adjacent land will be converted into highway ditches. Section 4.1.2 addresses the farmland that will be effected and Table 4-1 presents the prime farmland impacted by each alternative. For additional impacts, see Section 4.3 Secondary Impacts.

Comprehensive Plans – Most of the land through which US 2 passes is zoned for agricultural use. Therefore, the primary focus of the Local Comprehensive Plans, including those adopted by Williams, Ward, and Mountrail Counties, is to preserve and maintain agricultural land for agricultural use with industrial, commercial, and urban development confined to areas that are not agriculturally viable. Each of the build alternatives is compatible with these plans.

Land Use Impacts from Induced Development – Substantial additional growth along US 2 as a result of the build alternatives is not anticipated. A minor change in some land use and development patterns may occur locally within select areas near Minot and Williston. Residential development and commercial and industrial facilities may move towards the boundary of these cities. Currently, there exists excess infrastructure (utilities, developed lots, housing, and commercial buildings) in the area due to the loss of population and businesses. Any minor induced growth resulting from this project can and may use some of the excess infrastructure, which will reduce the need for new developments. Any development that would occur is subject to existing zoning ordinances and land-use plans.

4.1.2 Farmland Impacts

Prime Farmland Impacts: United States Department of Agriculture (USDA) and NRCS Soil Surveys for Williams, Mountrail, and Ward Counties were used to determine prime farmland impacted by the build alternatives. Impacts were assumed to occur to prime farmland located between the existing ROW and the proposed ROW for each build alternative. A prime farmland soil unit between the existing and the proposed ROW is counted as the loss of prime farmland. Acreages were calculated using electronic versions of NRCS soils maps and the ROW requirements for each build alternative. Ward County did not have an electronic version of prime soils, therefore these soils and their acreages were calculated by digitizing NRCS soils maps. Included in the impacts are prime farmland units that are also identified as wetlands, which would only become prime farmland if these wetlands were drained. Therefore, the actual prime farmland acreage impacted may be less.

There is approximately 512 acres of impacted cropland and rangeland located within the proposed South ROW Alternative. The North Alternative impacts approximately 1,049 acres of cropland and rangeland. The North/South and Complete Reconstruction Alternatives impact 550 and 467 acres, respectively. Ward County contains the greatest acreage of potentially impacted prime farmland (approximately 32.13 acres, North Alternative), Williams County contains 16.08 acres (North Alternative), and Mountrail County contains the least potential impacts (approximately 7.07 acres, North Alternative). Table 4-1 shows impacted prime farmland acres by alternative (Table D-3 in Appendices lists acreages by soil type per county). The proposed build alternative that impacts the greatest acreage is the North Alignment Alternative (55.28 acres), while the Complete Reconstruction Alternative impacts (19.91 acres). The Selective North-South Alignment Alternative (preferred) impacts 28.12 acres, and South Alternative impacts the least prime farmland at an estimated 11.56 acres.

Table 4-1
Estimated Prime Farmland Impacts (acres)

County	Alternative				
	South Alignment	North Alignment	Selective North-South Alignment¹	Complete Reconstruction	No Action
Williams	8.08	16.08	8.08	9.05	0
Mountrail	0.00	7.07	1.39	0.00	0
Ward	18.62	32.13	18.65	10.86	0
Total Acres	26.70	55.28	28.12	19.91	0

1. Preferred Alternative

Mitigation Measures for Farmland Impacts: The Farmland Protection Policy Act of 1981 requires the minimization of impacts on farmland based on the severity of impacts and other environmental factors. The build alternatives minimize the impacts to prime farmland by constructing the new roadway within an existing roadway corridor and adjacent to the existing US 2. Prime farmland impacts resulted only when new ROW is required where no other options were practicable.

The South Alignment and the Preferred Alternatives have similar prime farmland impacts (South 26.70 acres & Preferred 28.12 acres). The only build alternative that had less prime farmland impacts was the Complete Reconstruction Alternative (19.91 acres vs. 28.12 acres). However, complete reconstruction will impact more wetlands (87.92 acres vs. 79.84 acres), more jurisdictional wetlands (8.53 acres vs. 6.97 acres), and impact 4(f) properties (easement wetlands). Complete reconstruction will also require greater relocations of either businesses or homes (7 for Complete Reconstruction vs. 3 for the Preferred). While making changes in the alignment for the North/South Alternative may reduce impacts to prime farmland, it would increase the impacts in these other areas.

Currently, NDDOT owns additional ROW to the south along a portion of the existing road. If the Preferred Alternative is selected, this ROW not needed where the new roadway is north of the existing road could be sold to the adjacent landowner. There are several acres in this ROW that can be returned to prime farmland thereby mitigating a portion of the impacts for the Preferred Alternative.

In accordance with NRCS regulation (7 CFR 658.4 (c) (2)) Form AD-1006 was submitted to the NRCS. The Farmland Protection Policy Act (FPPA) states that if the site assessment points for any project alternative is a total score of less than 160 points (from the Form AD-1006), then the sites should be given minimal level of consideration for protection. None of the build alternatives scored 160 points or more. Due to the minimal impacts to prime farmlands, no additional considerations for protection and no additional sites were needed for evaluation. Maps showing locations of prime farmland were created and are on file at the NDDOT.

4.1.3 Social Impacts

No adverse long-term social impacts are anticipated. Easier, more efficient, and safer travel are the primary positive social impacts of this project. An improved US 2 highway across the state is socially important to the project area communities, especially the Williston area. The proposed project would connect all of North Dakota's major cities with high-level multiple-lane highways.

Community Cohesion: US 2 currently passes through Ray and around Ross, Stanley, and Berthold. The existing roadway through Ray will be utilized for all of the build alternatives. Consequently, no impacts to community cohesion caused by splitting the community are anticipated within Ray. Each build alternative adds the additional roadway to the south of the existing roadway through Ross. Nearly the entire community of Ross is located on the north side of the existing roadway, and no impacts relative to community cohesion for the build alternatives are expected. Similarly, the existing four-lane roadway will be

utilized through Stanley for each of the build alternatives, and no impacts related to community cohesion are anticipated. The city of Berthold is primarily located south of the existing roadway. The additional roadway through Berthold has been designed to minimize impacts by avoiding as many homes and businesses as possible. Isolation of portions of Berthold will not be caused by of any of the build alternatives, because the existing alignment will be used. Therefore, no impacts to community cohesion are expected.

Travel patterns and accessibility within the cities along US 2 will not change for any of the build alternatives, as there are no loss of interchanges or frontage roads planned. Therefore, there should be no impact upon travel patterns or access within the cities for any of the build alternatives. Access to US 2 by city residents will be similar for each of the build alternatives.

Each build alternative will improve access to land through which it passes because of reduced travel time due to highway continuity, increased passing opportunities, and an increased level of comfort when traveling. These factors allow for better accessibility to cities along the study route.

The Complete Reconstruction Alternative has potential to create a temporary social impact during construction, because of increased travel difficulties. This alternative would require the reconstruction of the existing roadway. Traffic impacts are anticipated during the construction. NDDOT carries traffic through construction areas with pilot cars. In addition, NDDOT uses electronic message boards and public information programs to keep the traveling public informed of construction activities. The other build alternatives would have minimal impacts to the traveling public, as most of the construction would not involve the current roadway but would be off to the side on an adjacent alignment.

Safety Issues: The build alternatives will reduce the number of severe accidents because of improved highway continuity and the separation of head-to-head traffic. Eliminating No-Passing Zones and providing an additional lane in each direction will accomplish this. Conflicts with slow-moving farm machinery, turning vehicles, and military convoys will be reduced because the additional lanes will be available for passing. The likelihood of train-automobile collisions is small because the mainline railroad tracks are separated from the existing roadway. The single track at grade crossing one mile west of Berthold, with one train per day, will remain protected with an automatic flashing light signal and short arm gates.

Environmental Justice: Executive Order 12898 pertains to Environmental Justice. The Order states that each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations in the United States.

The minority population for cities along US 2 is less than three percent, while the percentages within the counties range from 7.6 to 34 percent. The percentage of minorities for Mountrail County (34 percent) is not representative of the general population along US 2. The reason is the countywide percentage includes the Fort Berthod Reservation, located approximately 20 miles south of US 2. There are no tribal lands located on or adjacent to US 2. There are no concentrations of low-income housing or minority populations adjacent to the proposed project. The various build alternatives impact from one to nine residences dispersed through Williams, Ward, and Mountrail Counties. Based on observational data and the available census information, none of the build alternatives cause a disproportionate relocation of minority or low-income populations.

The need to relocate residents within the cities along US 2 does not differ among the build alternatives. One house within Berthold will be impacted for each of the build alternatives. There are no impacts to houses within the cities of Stanley, Ray, or Ross. The housing occupancy rate is low enough within the cities, such that housing should be available for those requiring relocation. Median home prices fall within a small range along US 2. None of the build alternatives disproportionately effect persons that rent, rather than own homes, nor homes having greater or lesser value.

Farmhouses that will be impacted can all be moved or rebuilt near their current location. Farm residents will have the opportunity to remain at the present location. The Selective North-South Alignment Alternative (preferred), has been modified to stay on the south side, near the east end of the study route, to avoid impacts to easement wetlands on the north side, increase safety by eliminating two sets of curves, and reduce construction costs by eliminating two transition areas. This modification will require relocation of the farmhouse adjacent to the south side of the highway.

4.1.4 Cemeteries

The North Alignment alternative will impact a cemetery at milepost 52.48 about two miles west of Ray. This alignment would need an estimated 65 feet of ROW from the cemetery. This would require the relocation of all the burials within this area. Other build alternatives, including the preferred alternative with a southern alignment, avoid impacts to the cemetery.

4.1.5 Relocation

The relocation impacts are based on visual inspections completed during site visits, analysis of aerial photographs collected by NDDOT in 1998, various letters and communication received from businesses and residents located along US 2, and the proposed design for each build alternative. Direct population impacts are the number of people effected by housing relocation. Population impacts are

based on the 2000 average household size of 2.6 persons for the three counties the proposed US 2 project transverses. Business impacts are based on the actual number of businesses that would need to relocate. The Preferred Alternative does not require the relocation of any businesses and requires the least number of relocations of all the build alternatives.

Housing Impacts: Direct housing impacts are based upon the estimated total number of occupied residents needing relocation for each build alternative (See Tables D-4 to D-7 in the Appendices). Table 4-2 shows the number of houses needing relocation under each alternative. Impacts range from three on the North-South Alignment Alternative (preferred) to nine on the North Alignment Alternative. Housing should be available for persons who choose to locate within the area (see section 4.1.3). Relocation of the existing house to a new location on the owner's property is another option. The Selective North-South Alignment Alternative (preferred) will not influence housing development along US 2. The build alternatives are not expected to change the availability of housing.

Table 4-2
Housing and Business Relocations

Relocation Issue	South Alignment	North Alignment	Selective North-South Alignment ³	Complete Reconstruction	No Action
Number of Houses Requiring Relocation ¹	4	9	3	7	0
Sites with a House and one other Building	1	4	0	2	0
Sites with a House and Additional Buildings	3	5	3	5	0
Number of Sites with Farm and Non-Farm Buildings Requiring Relocation (no house)	3	12	3	6	0
Number of Businesses Requiring Relocation	0	1	0	0	0
Total Sites with Structures Requiring Relocation ² (all categories)	7	22	6	13	0

¹ The sites with houses may also include additional buildings requiring relocation.

² See Table D-4 to D-7 in appendices for the list of structures and properties impacted by the US 2 build alternatives.

³ Preferred alternatives

The estimated population needing relocation ranges from eight on the North-South Alignment Alternative (preferred) to 24 on the North Alignment Alternative. Most, or all, of the displaced population will choose to relocate within the region. No major population loss is anticipated under any of the build alternatives.

Business and Employment Impacts: Table 4-2 shows that the North Alignment Alternative would impact one business. The other alternatives addressed in Table 4-2 would not require the relocation of any businesses. The business that would need to be relocated under the North Alternative is a service station located on the west side of Ray. The service station will likely be rebuilt in the area and would not result in any loss of employment. All alternatives will also impact Gratech Construction Inc., located at milepost 123.19 near Berthold. This construction business currently operates its parts and salvage yard within the proposed ROW. Relocation of the personal property will be necessary; however, there is adequate room on the existing site to relocate this equipment. There are no impacts to buildings located on this site. Therefore, there will be no direct employment impacts.

NDDOT Right of Way Section will determine the cost of moving any personal property. Businesses to be relocated have the option of moving the equipment or hiring someone to do it. If a business chooses to move its own property, the reimbursement amount is pre-determined. NDDOT will make direct payment to the bidder if hired to move the property.

Mitigation Measures for Property Acquisition: The Uniform Relocation and Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Relocation Act), as amended, provides for payment and just compensation for property acquired for a federal-aid project. Relocation assistance and payments will be provided to individuals, families, businesses, farm operations, and nonprofit organizations displaced by the acquisition or clearance of ROW. The

NDDOT Relocation Assistance Program follows the Uniform Relocation Act and assists eligible recipients whose property was acquired for new highway ROW.

To ensure the availability of adequate resources, a written relocation plan will be developed. The plan will include a review of the local market conditions and real estate availability. The mitigation process will coincide with the selected alternative.

All property purchased will be inspected by one or more appraiser. The property owner will be invited to accompany the appraiser during inspection of the property. The appraised value of the property will be determined and offered to the owner. If no agreement on the fair market value can be reached, the property owner will be advised of the appeal procedure.

4.1.6 Utility Impacts

The South Alignment and Selective North-South Alignment Alternatives (preferred) potentially impact missile silo cables at seven locations (approximately 1,460 feet), similar to the North Alignment Alternative with seven locations (approximately 460 feet). Impacted missile silo cables will need to be lowered. Because the number of sites is the same, impacts are considered similar for all build alternatives. The US Air Force did not express concerns about relocating the cable during the scoping process, at the Public Hearing, or in response to the DEIS.

The North Alignment and the Complete Reconstruction Alignment Alternatives potentially impact nearly 29 miles of 8-inch to 12-inch high-pressure water lines, which serve the city of Stanley. Most of the water line is located 70 to 90 feet north of the existing roadway between mileposts 61.7 and 89.26. The Selective North-South Alignment Alternative (preferred) impacts 1.4 miles of water line between mileposts 84.2 and 85.6 (see Figure B-9 in appendices). Some

temporary disruption in service may occur during construction. The South Alignment Alternative will not impact the water line.

The relocation of water lines is of concern because of the financial impact to the rural water association that the water lines serve. Since these lines are within the existing ROW by permit, all relocation costs are a local responsibility. Estimated relocation costs range from \$178,000 to \$3,500,000, depending upon the alternative selected. These costs may be passed on to local customers of the rural water association. The Preferred Alternative is estimated to impact 1.4 miles of the water line west of Stanley where the new roadway will be shifted to the north to avoid impacting a farm and a missile silo. During design, the length of the north shift as well as the length of the transitions will be reviewed for possible adjustments to further reduce the impact to the water line. There were no views expressed by the city of Stanley concerning the relocation of the waterlines through the scoping process, at the Public Hearing, or in response to the DEIS that was sent on August 28, 2002.

4.1.7 Economic Impacts

North Dakota's highway system is pivotal in enabling economic growth, in determining the patterns of that growth, and in determining the competitiveness of businesses in a world economy. A well-developed highway network that effectively moves people and goods is vital to North Dakota's long-term economic viability. Highways do not only move raw materials and finished products, but also transport customers to the product. A safe and reliable US 2 is an important component in supporting the economy of northwestern North Dakota.

The highway network in North Dakota is central to so many activities that determining the value of financial and social impacts is very difficult. However, we realize that our transportation system causes and, in turn, is caused by economic development. Though transportation networks cannot ensure economic

development by themselves, highway facilities are a vital link to sustaining and promoting successful economic development. Showing commitment to improving major highway corridors, such as US 2, exhibits North Dakota's willingness to invest in the state's infrastructure to meet future needs and promote economic growth.

Although highways are a major component of economic growth, investments in air and rail facilities, private and public investments in tourism facilities, commercial, manufacturing, and industrial facilities are essential. North Dakota needs a sound highway system to assist in diversifying its economy.

One major area that the state is focusing on is development and expansion of the tourist industry. Local, county, city, state, and federal jurisdictions have made a commitment to the tourist industry at the confluence of the Missouri and Yellowstone rivers and along Lake Sakakawea. Completing the US 2 project will assist in promoting and enhancing tourism activities in northwestern North Dakota.

Local leaders see the proposed improvement of US 2 as a key element in the overall strategy for attracting business and industry to area towns. Local leaders, especially those in Williston, want to use the high level of service and reliability of an improved US 2 in promoting their marketing efforts. The improvements to US 2 will provide a long-term benefit to the economic viability of northwestern North Dakota.

The short-term economic benefits of completing the US 2 project will be construction dollars spent in the surrounding communities. A 1999 Federal Highway Administration report estimates that for every million dollars spent on road construction about 44 jobs are created, most of which are private sector jobs. According to a study conducted by North Dakota State University, every dollar spent on construction generates approximately \$1.78 in new dollars in the

community. The project is scheduled to be completed over a nine-to-ten-year period. During that time, the contractor will be hiring local workers, purchasing supplies from local vendors, and contractor employees will be supporting local businesses.

Ultimately, the highway network's most important contribution to the public is sustaining daily activities and social and economic needs. The build alternatives for US 2 will provide a safe, predictable, consistent, and reliable highway system for the business consumer as well as the actual movement of people and goods to and through the northwestern part of the state.

4.1.8 Considerations Relating to Pedestrians and Bicyclists

Because the build alternatives use the existing section bypassing Ray and Stanley, pedestrian safety in those towns will remain unchanged. Each build alternative adds the new roadway to the south of the existing roadway through Ross and to the north through Berthold. Because no portion of Ross or Berthold becomes isolated from the remainder of the city by the proposed action, pedestrian safety there will remain unchanged.

Operation of bicycles and the movement of pedestrians using the rural portion of US 2 is expected to improve because of the wider shoulders associated with each build alternative. Rumble strips, installed on the shoulders, are less than two feet wide. However, the outside shoulder width of ten feet will leave at least eight feet for bicycle operations. This width is adequate for bicycle and pedestrian travel.

4.1.9 Air Quality Impacts

Post-Construction Air Quality Impacts: Post-construction, transportation-related air-quality concerns are limited to two primary pollutants; i.e., inhalable particulate matter (PM₁₀) and carbon monoxide (CO). Air quality impacts, with regard to the primary pollutants, PM₁₀ and CO, are expected to be negligible. The

impacts to air quality, specifically CO increases, will be negligible or minor, based upon the anticipated increase in traffic volume over a projected 20-year period. The level of service of the roadway will inherently increase the efficiency of travel, thereby negating some of the effects of increased traffic volume. Only minor increases in the primary pollutant (PM₁₀) are expected after the completion, which will be proportional to the increase in medium and heavy truck traffic.

According to the NDDH Division of Air Quality, the projected traffic volume for the build alternatives is not enough to effect air quality. Typical thresholds for air quality concerns occur with traffic volumes of approximately 25,000 vehicles per day. Given the status of North Dakota's air quality and predicted traffic volume, neither federal nor state ambient air quality standards during the post-construction phase will be violated.

Mitigation Measures for Air Quality Impacts: No post-construction mitigation measures are planned for any of the alternatives.

4.1.10 Noise Impacts

Traffic Noise Impacts: Traffic noise impacts may exist under two conditions (NDDOT, 1997). The first condition occurs when an increase of ten decibels (dBA) is projected to occur either upon project completion or 20 years in the future. The second condition occurs when noise levels are within two dBA of the FHWA Noise Abatement Criteria (Table D-9 in Appendices).

The parameters $L_{10}(h)$ and $L_{eq}(h)$ represent the sound level that is exceeded ten percent of the time over an hour and the equivalent hourly steady-state sound level that contains the same acoustic energy as a time-varying sound level during the same time period. It should be noted that either $L_{10}(h)$ or $L_{eq}(h)$ (but not both) may be used to characterize impacts. In addition, these sound levels are the absolute levels where abatement must be considered. The $L_{eq}(h)$ will be used for the purpose of this analysis.

The noise analysis showed similar results for the existing condition (which is also the No-Action Alternative) and build alternatives. Under existing conditions at 120 feet from the outside shoulders of the roadway, $L_{eq}(h)$ decibel readings were determined to range from 60.0 to 61.4 dBA. Under the build alternatives at 120 feet from the outside shoulders of the roadway, $L_{eq}(h)$ decibel readings were determined to range from 59.3 to 61.6. Therefore, no change in noise levels is expected from the build alternatives, regardless of the distance from driving lane. Despite a greater peak traffic volume and higher design speed, the proposed build alternative design has similar noise levels associated with eastbound and westbound (two-way) traffic on one driving surface compared to the No-Action Alternative. This is because the analysis is largely dependent upon truck volumes.

The minimum horizontal distance within the city of Ray from the existing roadway to a possible receptor is approximately 30 feet from the outside edge of the driving lane. There are no sensitive noise receptors in Ray, as described by Activity Category A. The Activity Categories within Ray are generally classified as B or C. The noise analysis shows that for a speed of 25 mph, the existing noise level expressed as the peak $L_{eq}(h)$ is 59.5 dBA at a distance of 30 feet from the outside edge of the driving lane. The noise level for the build alternatives at the same location peaks $L_{eq}(h)$ at 60.5 dBA. This is well below the FHWA Noise Abatement Criteria of 67 dBA for Activity Category B. Therefore, the minor increase in noise expected within Ray for the build alternatives is below the impact threshold.

No impacts are expected according to the FHWA Noise Abatement Criteria. Most activity categories can be classified as B or C with $L_{eq}(h)$ decibel values of 67 and 72 dBA, respectively. Estimated noise levels at receptors, along US 2, falls well below these levels. In addition, projected noise levels are not greatly different than current noise levels. There is no indication of highly sensitive receptors, such as that described by Activity Category A.

Construction Noise Impacts: Construction noise impacts are discussed in Section 4.1.21 Construction Impacts.

4.1.11 Water Quality Impacts

Each build alternative is expected to maintain the regional drainage system of the watersheds and would be consistent with these water quality management efforts. Therefore, none of the build alternatives is expected to alter or prevent the restoration plans as defined by the UWA.

Impacts from Highway Runoff: Several studies have identified a variety of constituents found in highway runoff (FHWA 2000). These constituents primarily include suspended and dissolved solids, chromium, copper, cadmium, lead, nickel, nitrogen, phosphorus, zinc, manganese, and petroleum hydrocarbons. Pathogens posing a human health risk are typically uncommon in highway runoff. The primary sources of these constituents are related to tire wear, spills and leaks of fluids, antifreeze and petroleum products, and the wear associated with moving engine parts. The use of de-icing agents such as road salt can also lead to corrosion, damage to vegetation, and effect the stratification of small water bodies, if present in sufficient concentrations.

The concentration ranges for various constituents in highway runoff typically varies by an order of magnitude (See Table D-10 in Appendices). Concentrations are largely dependent upon the degree of urbanization and the intensity of the surrounding land uses. De-icing agents are used sparingly on rural stretches of highways in North Dakota. Therefore, concentrations in the runoff from US 2 are expected to be in the low end of the concentration range based on the projected traffic volumes and low amount of urbanization.

The pollutant concentrations within streams, rivers, and lakes are related to the load or mass of pollutants entering waterways. The amount of runoff and the concentration in the runoff are multiplied to obtain the load. The load is related to

the amount of runoff and, therefore, the amount of impervious surface. Each build alternative will add an additional roadway. Therefore, the impervious surface area is expected to double as well as the existing pollutant loads. However, because of the large existing drainage areas compared to the drainage area of the roadway, the load increase for each of the build alternatives is expected to be similar (and minor) and not cause measurable long-term concentration increases or result in exceeding water quality standards. Best Management Practices (BMPs) for storm-water runoff will be followed to ensure appropriate measures are taken to protect the resource.

Source Water Impacts: There are no sole-source aquifers and wellhead protection areas located in the US 2 Corridor. Therefore, no water quality impacts to aquifers, wellheads, or sensitive ground waters are expected as a result of the build alternatives.

Mitigation Measures for Water Quality Impacts: No post-construction mitigation measures are expected.

4.1.12 Permits

Federal permits, some of which are administered by state agencies, are required for certain aspects of the build alternatives. Several other approvals may be required.

ACOE Permit (Army 404): Section 404 of the Clean Water Act requires approval prior to discharging dredged or fill material into waters of the U. S. Waters of the U. S. is defined as all navigable waters (presently and historically) and their tributaries, all interstate waters and their tributaries, all wetlands adjacent to these waters, and all impoundments of these waters (ACOE, 2002). Waters of the U. S. include adjacent wetlands and tributaries of the Little Muddy River, Otter Tail Creek, Stony Creek, Beaver Creek, White Earth River, and Paulson Creek.

Floodplain Management Permit: Floodplain management is addressed by Executive Order 11988 issued in 1978. The NDSWC is responsible for the federally directed floodplain management program. The permitting requirements and permit formats can vary depending on the local regulatory entity. A floodplain management permit will be required from the NDSWC (see Section 4.1.15).

Section 401 Certification and NPDES Permit: Compliance with water quality standards is covered under Section 401 of the Clean Water Act. The ACOE determines Section 401 certification through consultation with the NDDH. A NPDES Permit, administered by the NDDH, is also required for construction activity such as clearing, grading, and excavation activities. Coverage under an NPDES General Permit requires the development of a storm water management plan. The storm water management plan is developed by the contractor and approved by the NDDH.

4.1.13 Wetland Impacts

A field survey, along US 2 from the junction of US 85 to the junction of US 52, was conducted in 1999 to inventory wetlands that may be impacted by the proposed action. The survey included the area on 300 feet on both sides of the existing roadway centerline and identified 315 acres of wetlands in 382 basins (*Wetland Assessment and Preliminary Impact Report*, Houston Engineering, Inc., March 2000). There are no state and federal fee title lands, such as Waterfowl Production Areas (WPAs) or National Wildlife Refuges, present within the area surveyed. However, there are numerous United States Fish and Wildlife Service (USFWS) easement wetlands within the area surveyed. Easement wetlands are wetlands located on privately owned parcels where the USFWS has purchased a conservation easement and therefore has an interest. These easements, which prohibit draining, filling, or burning of a wetland within the parcel, are considered 4(f) properties. The majority of the wetland easements are between mileposts 90 and 120. Wetlands located on highway ROW or privately held parcels without

conservation easements are defined as non-easement wetlands for the impact analysis. Easement and other wetland impacts are summarized in Table 4-3.

Direct Wetland Impacts: Direct impacts to wetlands for the build alternatives were determined by estimating where the toe of the inslope would extend into the wetland basins located within the proposed ROW. Impacts were determined by assuming that the portion of the wetland covered by the footprint was permanently filled (i.e., direct impact). The analysis assumed that the centerline profile or grade line of the new roadway for each build alternative was the same as the existing roadway. Construction plans for the existing roadway were used to determine the vertical separation between the road profile and the low point of each wetland basin. The separation distance was then used to develop a footprint for the new roadway. Table 4-3 shows the estimated direct wetland impacts for the build alternatives. The impacts range from approximately 75.15 acres (North Alignment Alternative) to 87.92 acres (Complete Reconstruction Alternative). The Preferred Alternative is estimated to have 79.84 acres of direct wetland impacts, which is less than five acres more than the alternative with the least wetland impacts (North Alignment Alternative).

The wetlands are predominately glacial depressions filled with spring runoff from melting snow. They range from emergent wetlands with a seasonal to semi-permanent water regime, to open water wetlands with permanent water regimes though water levels fluctuate annually depending on the amount of snow pack and summer rainfall recharge. The functions of these wetlands are interdependent, so each wetland type is assumed to be equally important with regard to ecological function within the landscape.

Functions of impacted wetlands may be affected in different ways but types of impacts will be similar in all build alternatives. Drainage of wetlands is not anticipated, and, therefore, the hydrology will be similar to what exists today. Functions of wetlands partially filled are not expected to change because changes

in drainage patterns will be small and have minimal effects to isolated wetlands. Few, if any, of the wetlands that will be completely filled, contain water on a permanent basis and most are subject to haying or farming. Buffers (vegetation), currently located around these wetlands, vary from one year to the next, depending on how much and how long water is retained. Buffers are also dependant on adjacent land use. Following construction, ditches and uplands adjacent to the wetlands will be reseeded with native grasses to reestablish the buffer area. All wetland impacts will be mitigated, either on-site or off-site, with wetlands of equivalent or greater functions as approved by USFWS and NDGFD.

Jurisdictional Wetland Impacts: Jurisdictional wetlands are subject to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. The ACOE reviewed the proposed project area and identified the wetlands that are subject to ACOE jurisdiction under Section 404 (Table D-17). Estimated impacts range from 8.53 acres for the Complete Reconstruction Alternative to 6.97 acres (see Table 4-3) for the Selective North-South Alignment Alternative (preferred). Many of these impacted wetland acres (2.94) do not have standing water and are typically hayed or farmed. The remaining impacted acres (4.03) are discussed in Section 4.1.14, Water Body Modifications and Wildlife Impacts.

The ACOE prefers to use one Individual 404 Permit that would apply to all construction segments. The permit will require NDDOT to provide the ACOE final construction plans, actual wetland impacts, and regular updates regarding the project schedule.

Easement Wetland Impacts: Easement wetland locations were identified by the USFWS. Easement wetland locations were mapped using the same scale as the wetland field survey. Impacts to the easement wetlands were based upon the surface area of the wetland within the new ROW (i.e., amount of wetland surface area located on easement land and within the additional ROW needed for a build alternative). Impacts were determined by calculating the wetland acreage

between the existing ROW and the proposed ROW by alternative. No impacts occurred within parcels where no ROW changes occur. Table 4-3 shows that the estimated impacts to wetland easements located within the proposed ROW for the build alternatives ranges from approximately zero acres for the Selective North-South Alignment Alternative-preferred to 11.12 acres for the North Alignment Alternative. The estimated acreage of directly filled easement wetlands ranges from 3.11 acres for the North Alignment Alternative to zero acres for the Selective North-South Alignment Alternative (preferred).

Mitigation Measures for Wetlands: Efforts to avoid and minimize impacts to wetlands were considered and resulted in several design modifications. The remaining impacts are considered unavoidable and require compensatory

Table 4-3
Wetland Impacts by Alternative (acres)¹

	Wetlands Within Proposed ROW (Acres)			Direct Impacts (Wetlands Filled) (Acres)			
	Easement Wetlands	Non-Easement Wetlands	Total	Easement Wetlands	Jurisdictional Wetlands	Other Wetlands ²	Total
South Alignment Alternative							
Total	0.92	151.44	152.36	0.81	6.97	71.72	79.50
North Alignment Alternative							
Total	11.12	182.15	193.27	3.11	7.22	64.82	75.15
Selective North-South Alignment Alternative (preferred)							
Total	0	154.24	154.24	0	6.97	72.87	79.84
Complete Reconstruction Alternative							
Total	1.47	150.77	152.24	0.40	8.53	78.99	87.92

¹ See Tables D-11 and D-12 in appendices, for wetland impacts using the Cowardin Classification System.

² Wetlands that are non-jurisdictional and non-easement.

mitigation. The wetland impacts requiring mitigation are based on the estimated acreage directly filled by construction. Wetland mitigation will consist of a minimum acre-for-acre replacement of filled or drained wetlands. During final design, consideration will be given to replacement by constructing or expanding

wetlands within or adjacent to the ROW and constructing wetlands in borrow areas.

Construction of the 100-mile study route will take place in phases and may take up to ten years to complete. The first phase, Ray to Tioga [HPP-7-002(052)053], will impact approximately 2.70 acres of wetland. 1.51 of the 2.70 acres are under the jurisdiction of the ACOE. See Table 4-8. Preliminary Project Segment Locations, page 4-72 for a complete list of all individual segments of this project.

The Selective North-South Alignment Alternative (preferred) as modified from the DEIS will not impact any easement wetland. If another alternative is selected, it would be necessary to compensate the USFWS for the value of the easement wetlands incorporated into the highway ROW. Two options were being considered for the replacement of easement wetland impacts. The first option is the use of easement credits held in the state easement bank. Wetland credits are available from the mitigation site created north of Stanley in 1975. Utilization of these banked wetland credits may be the most cost effective method for the replacement of easement wetland impacts. The second option is an easement exchange program. Under this option, additional easements would be purchased by NDDOT and exchanged with the USFWS to replace the existing easements.

Agency Consultation on Wetland Impacts: Meetings were conducted on March 2nd, September 13th, and September 15th, 2000, to discuss wetland impacts with regulatory agencies. In attendance at the various meetings were representatives from the ACOE, USFWS, North Dakota Game and Fish Department (NDGFD), FHWA, and NDDOT. The agency discussions focused on the methods used to assess wetland impacts and the results of the wetland field study. Agency comments were incorporated into the revised wetland report. Agency comments were also requested when draft copies of the *Wetland Assessment and Preliminary Impact Report* (Houston Engineering, Inc., 2000) were mailed to agency contacts.

FHWA, ACOE, and NDDOT met on April 1st and on June 30th, 2003, to discuss jurisdictional wetland. EPA had representatives at the June 30th meeting. During the June 30th meeting, ACOE provided attendees a preliminary list of jurisdictional wetlands. EPA, FHWA, and NDDOT representatives visited the proposed project location on July 1st to view the jurisdictional and non-jurisdictional wetlands that may be impacted. On August 14, 2003, EPA sent additional comments on the DEIS in an e-mail to FHWA, which listed eight wetlands where they would like to see impacts avoided or minimized to the extent practicable (see page 7-29 through 7-32 for copy of e-mail and response).

Mitigation Measures for Previous Environmental Commitments: During the 1970s, NDDOT improved US 2 from Ray to four miles west of Berthold, a distance of approximately 66 miles. This project was documented in the 1976 FEIS, which addressed the reconstruction and relocation of the existing two-lane roadway. The FEIS also provided for the acquisition of ROW and mitigation of impacts for the future construction of a divided four-lane highway. The previous environmental commitments included the following measures to minimize adverse impacts related to wetlands: 1) replacement of the USFWS easement wetlands; 2) creation of shallow wetlands within the ROW; 3) designing ditches to minimize opportunities to drain adjacent wetlands; and 4) using ROW management practices to improve the productivity of adjacent wetlands (managed mow or no-mow provisions).

As noted, the intent of the previous project was to identify and mitigate actual wetland impacts (see Table 4-4) as well as future wetland impacts on this segment even though only one-half of the ultimate four-lane highway was to be constructed at the time. In the past, Federal Aid Funds could not be used to mitigate impacts on privately owned (non-easement) wetlands on property outside the highway ROW. Consequently, ROW management practices (managed mow provisions) restricting the mowing on highway ROW were substituted for the replacement of non-easement wetlands. NDDOT and others believed the

managed mow practice enhanced the productivity of the remaining wetlands. Research showed higher waterfowl nesting success in areas of unmowed ROW.

Table 4-4

Summary of Wetland Impacts – Ray to 4 Miles West of Berthold (acres)

Wetlands (non-easement and easement) within the ROW – 1976.	=	210
Wetlands within the ROW – 1999.	-	114
Wetlands filled and/or drained.	=	96
Acres of easement wetlands mitigated (1976).	-	67
Net loss of wetlands - 1976.	=	29

In the mid to late 1970's, NDDOT began making environmental commitments in highway project environmental documents to create managed mowing areas (managed-mow) on selected portions of highway ROW. A total of approximately 363 miles (8200 acres) of ROW, on a number of widely scattered projects located in various areas of the state, were declared managed mowing areas. Within this mileage there was a net loss of 136 acres of wetlands.

These managed mowing commitments were made because total replacement of the impacted wetlands was not possible within the highway ROW and Federal Regulations (23 CFR 777.2) virtually prohibited offsite wetlands mitigation. The managed-mow commitment was an effort to make the remaining wetlands more productive as research indicated higher waterfowl nesting success in areas of unmowed ROW.

The Fifty-Seventh Legislative Assembly (2001) passed SB 2224 (24-01-51 NDCC) which directed NDDOT to submit a Plan to the Fifty-Eighth Legislative Assembly (2003) to eliminate managed-mow areas from the ROW adjacent to highways under the department's jurisdiction.

ND Game and Fish Department (NDGFD) and the State Land Department (SLD) proposed the sale of non-profitable School Land to NDDOT. The NDGFD has determined approximately 4822 acres would have wildlife habitat value. With this plan, NDDOT will appraise and acquire this land in fee. The ND Game and Fish Department would then manage the land. USFWS and ACOE were consulted and both have determined that the proposed plan is acceptable. This plan was then presented to the Fifty-Eighth Legislative Assembly.

House Bill 1012, passed by the Fifty-Eighth Legislative Assembly, authorized the purchase of land to eliminate managed-mow areas. It also required public hearings in counties where the land is located. The same bill extended the deadline for the elimination of managed-mow to July 15, 2006. Therefore, the purchase of the mitigation tracts must be complete and in place prior to that date. A plan to move the managed-mow commitments for the highway ROW has been agreed upon by interested federal and state agencies. The plan includes provisions to ensure that the current environmental commitments, including those made in the 1976 FEIS covering improvements to US 2, will be satisfied. The implementation plan will be approved and signed by all parties prior to construction. The replacement of managed mow areas in the ROW with off-site mitigation will result in higher quality mitigation. The new plan will also allow for the purchase of replacement wetlands for the net loss of 29 acres of wetlands resulting from the 1976 improvements to US 2 that were previously mitigated with managed-mow provisions.

4.1.14 Water Body Modifications and Wildlife Impacts

Water Body Modifications – Water body modifications consist of the placement of fill in wetlands and watercourses, draining wetlands, and channel realignment. Water body modifications are needed to extend culverts, construct bridges, grade the roadbed and shoulders, and construct the road. (The placement of fill within wetlands is addressed in section 4.1.11. Two bridges and eight culverts provide stream and river crossings along US 2. Bridges over a stream or river are located

at the Little Muddy Creek (milepost 33.31) and the White Earth River (milepost 73.22). Reinforced concrete box culverts (RCB) are located at one intermittent stream crossing (milepost 57.04) and the Little Knife River (milepost 91.42). The other crossings consist of structural plate pipes (SPP) located at several intermittent stream crossings (mileposts 33.09, 36.35, 44.76, 45.07, 45.85, 128.90).

The length of streams and rivers altered at these locations is similar for each build alternative. The modifications will generally impact approximately 350 to 400 lineal feet at the locations where structures will be modified or replaced. The estimated acreage of impact to riverine habitat from water body modification ranges from 0.87 to 0.49 acres for the build alternatives. In many cases, these stream sections were previously straightened because of road construction. Channel realignment at remaining intermittent creek crossings is not anticipated.

The White Earth River is the location where potential physical alteration of riverine habitat is the greatest. Oxbows of the old White Earth River channel run parallel to the roadway for a short distance north and south of the existing roadway, but are more common on the south. Because of the potential impact to these wetlands and number of cultural resource sites near the current roadway, the impacts of a narrower median were evaluated. Impacts to the wetlands were minimized for all alternatives by reducing the centerline-to-centerline separation to 54 feet.

None of proposed build alternatives is expected to alter regional drainage patterns. The present locations where runoff crosses US 2 will be maintained. Local drainage patterns will also be maintained to the extent possible using proper grading and the installation of culverts and water-control devices.

Wildlife Impacts: Terrestrial communities or cover types represent the habitats used by a variety of wildlife species. Therefore, the change in the amount of

these community/cover types is one measure of the potential impact to wildlife. Community/cover types were initially interpreted from 1999 aerial photography. Community/cover types were subsequently verified in the field during the summer of 1999 and categorized as wetland, native prairie, upland forest, windbreaks, rangeland, non-native grassland, or cropland.

Windbreak acreage was estimated using aerial photography and a typical horizontal distance between planted tree rows based on the type of species (Table D-14, Figure B-10 in the Appendices). The typical horizontal distance between planted tree rows multiplied by the windbreak length within the proposed ROW resulted in the estimated acres impacted. The type of species and horizontal distance was later field verified. The location of forested acreage was estimated from aerial photography and later field verified. Forested acreage within the proposed ROW was considered impacted.

The impacts to upland forest range from 13.9 acres Selective North-South Alignment Alternative (preferred) to 19 acres, North Alignment Alternative. Most of the upland forest is located within the draws and coulees of the White Earth River Valley (See Table D-15 in Appendices). Windbreak impacts range from 18.1 acres (Complete Reconstruction Alternative) to 37.6 acres (North Alignment Alternative). Small pockets of remnant native prairie are impacted by the build alternatives. The impacts to native prairie range from 2.5 acres, South Alignment and Selective North-South Alignment (preferred) Alternatives to 3.3 acres, North Alignment Alternative. These are small pockets of native prairie with a limited ecological function.

Native prairie impacts were based upon permanent loss caused by placement of the road on existing native prairie areas (See Figure B-10 in Appendices). Native prairie exists along US 2 as small remnant areas that remain because they are on slopes too steep for cultivation or left undisturbed during previous construction

activities (See Table D-13 in Appendices). Native prairie that has been fenced and grazed has been categorized as rangeland.

The dominant habitat/cover types are non-native grassland (the planted ROW), cropland, and rangeland (Table 4-5). Therefore, wildlife impacts would be expected to be greatest for terrestrial wildlife and animals using these cover types and habitats. The proposed ROW can be planted to a native seed mixture capable of replacing these wildlife habitats. Therefore, for wildlife populations, the impacts for these community/cover types are of less concern than wooded habitats (forest and windbreaks). Most of the cropland areas are planted to small grains and do not provide unique or exceptional wildlife habitat.

With the possible exception of wetland species, the impacts are not expected to differ between the build alternatives, because the change in community/cover type for the alternatives is similar. The long-term impact to riverine wildlife species is expected to be minor because of the small amount of riverine habitat impacted by the build alternatives. Impacts will be similar for all the build alternatives.

Table 4-5
Habitat/Cover Types Within the Proposed ROW (acres)¹

Community/ Cover Type	Alternative			
	South Alignment	North Alignment	Selective North-South Alignment ²	Complete Reconstruction
Cropland	222	482	238	198
Rangeland	290	557	312	259
Others ²	28	76	30	24
Total Acres Impacted	540	1115	580	481

¹ Percentages were calculated based on Field/Habitat Delineation. The percentage was then applied to new Alternatives ROW to determine the above acreages.

² Includes Upland Forest, Windbreaks, Native Prairie, Riverine, and Rural Developed.

Mitigation Measures and Consultation About Wildlife Impacts: Impacts to woody vegetation potentially requires mitigation. The NDGFD has requested the mitigation of woody vegetation, primarily shelterbelts, impacted by the proposed action at a 2:1 ratio. The ROW will be seeded to a native prairie mix, as identified in NDDOT Standard Specifications for Road and Bridge Construction. This would be considered an improvement relative to wildlife habitat compared to the non-native grassland, cultivated land, rangeland and pasture dominated by invasive and tame grass species.

4.1.15 Floodplain Impacts

Bridges and culverts used for crossing streams, rivers, and other waterways will be located along US 2 for each of the build alternatives and have the potential to reduce conveyance, increase water depth upstream, and cause floodplain impacts. Activities that have the potential for floodplain impacts can be generally characterized as short extensions added to existing box culverts, minor fill in the channel, shoulder grading, or box culvert replacement. Construction activities associated with the bridge replacement include demolition and removal, construction of the bridge, minor channel reshaping around the bridges, minor fill, and riprap in the channel.

Two bridges and eight large culverts provide stream and river crossings along US 2. An additional bridge either north or south of the existing bridge will be needed at the White Earth River and Little Muddy Creek for the build alternatives. Other smaller culverts (generally 24-inch diameter and less) are used primarily to convey runoff from the local drainage area into or across the ROW. Homes, businesses, and other structures are generally absent from the areas upstream from these crossings. Therefore, none of the build alternatives will result in induced flood damages at these locations.

One identified base floodplain crosses US 2. Known as Lonetree Coulee, it is located at milepost 128.9 (T156N, R85W, Sec. 21). Lonetree Coulee drainage is

just east of Berthold. There are no buildings in the floodplain upstream or downstream in the area of the highway crossing. This floodplain does not have a regulated floodway. The existing Structural Plate Pipe culvert at Lonetree Coulee will likely be replaced with a new Reinforced Concrete Box culvert.

A preliminary hydraulic study has been completed. The new roadway will be built with a structure that does not appreciable change the current flows. No significant change in floodplain elevations will occur at this location. Changes, if any, will not cause the floodplain to interrupt transportation facilities, create significant risk, or adversely impact natural and beneficial floodplain values. There will not be any significant encroachment on the Lonetree Coulee floodplain.

All structural design will be based upon the American Association of State Highway and Transportation Officials (AASHTO) *Highway Drainage Guidelines* (AASHTO, 1988) and *North Dakota Stream Crossing Statutes and Rules* (ND Administrative Code 89-14) during final design. Structures will be sized to comply with floodplain encroachment standards. The hydraulic design will be guided in part by the present and post-project runoff rates and volumes, and the pre-project drainage patterns. Existing drainage patterns will be maintained to the extent practicable. Drainages, private ditches, and watercourses will be maintained, restored, or redesigned. An application to the North Dakota State Water Commission (NDSWC) for a non-structural floodplain permit will be submitted for the floodplain locations during the design of the project.

4.1.16 Wild and Scenic Rivers

There are no Wild and Scenic Rivers within the area of the proposed action.

4.1.17 Threatened or Endangered Species

A 1999 field survey was completed to determine whether Federal Threatened and Endangered (T & E) species or their habitats were present (*Natural Resources and*

Threatened and Endangered Species, Houston Engineering, Inc., March 2000). In addition, the presence of rare¹ plant communities, as recognized by the North Dakota Natural Heritage Program of the North Dakota Parks and Recreation Department (NDPRD), was also documented during the survey.

Impacts to wildlife will primarily occur during the construction phase of the project. The greatest impacts will be to wetland species. The primary species include ducks, geese, and muskrat. These species are dependent on the wetland for both breeding and foraging. Due to the high number of wetlands adjacent to the project, most of these species will presumably relocate to adjacent wetlands. Upland game such as deer and ring-necked pheasant will also be impacted. Due to the abundance of habitat, impacts will be minimal. The greatest impact to effect both groups will be the addition of another lane. However, traffic volumes are expected to increase minimally, and no conclusive studies have shown that wider highways result in an increase in the number of animal-vehicle collisions. Collisions with animals tend to occur over greater distances (extent of highway) versus isolated areas. However, there may be a correlation with higher traffic volumes rather than increased roadway width. Multiple lanes will separate traffic and provide crossing animals a buffer in the median.

Federal T & E Species Impacts: Six species are listed by USFWS as threatened or endangered within in the three-county area (See Table D-16 in Appendices of the Environmental Impact Statement for the proposed project). Two of the six species, the interior least tern (*Sterna antillarum*) and the pallid sturgeon (*Scaphirhynchus albus*), do not exist in proximity to the project area. Therefore, it has been determined that the proposed project will have no effect on these three endangered or threatened species.

¹ The NDPRD also uses the term Threatened and Endangered Species. To avoid confusion with the federally listed species, the term "rare" will be used to refer to state species.

Three of the listed species, the bald eagle (*Haliaeetus leucocephalus*), the whooping crane (*Grus Americana*), and the gray wolf (*Canis lupus*), are transient species, and there are no known nesting or breeding sites in proximity to the project area. Because none of these species have been sighted in the project area and because the construction of this project will not adversely impact these species, it has been determined that the proposed project will have no effect on the bald eagle, the whooping crane, or the gray wolf.

The last of the six listed species, the piping plover (*Charadrius melodus*), was not sighted or observed living the project area. However, critical nesting habitat (alkali deposits) for the piping plover has been identified by the USFWS in a number of wetlands (See Figure B 10 in Appendices) in the project area between Stanley and the Ward/Mountrail County line. The proposed project will not impact any of these areas of critical habitat identified by the USFWS for the piping plover. Because piping plover have not been sighted or observed living in the project area and because the construction of this project will not impact the critical habitat of the piping plover, it has been determined that, while the project may effect the piping plover, it is not likely to adversely effect either habitat or the species population.

In addition to the six threatened or endangered species listed, USFWS lists the Dakota skipper butterfly (*Hesperia dacotae*) as a candidate species within in the three-county area. There have been no sightings or records of the Dakota skipper in the immediate project area. Because this species has not been sighted in the project area and because the construction of this project will not adversely impact critical habitat for this species, it has been determined that the proposed project will have no effect on this candidate species.

Consultation and Mitigation Measures for Federal T & E Species: Consultation has informally occurred with both the NDPRD and the USFWS. The NDPRD provided a list of state rare species and confirmed that these species have no

special regulatory status. USFWS requested daily observations of denuded construction areas for piper plover activity (Kriel, 1999). Past USFWS experience shows that piping plovers can utilize areas that have been stripped of vegetation during construction activities.

Piping plover have been known to be attracted to denuded construction areas. Therefore, per USFWS's request, NDDOT will include a provision in the construction contracts, for projects in the area between Stanley and the Mountrail/Ward County line, to ensure that nesting-piping plover are not impacted. NDDOT will require project oversight personnel as well as the contractor's personnel to receive training in identifying piping plover and piping plover nests prior to start of construction. The USFWS will provide training in standard breeding survey protocols. Specifics relating to the survey such as timing and locations will be determined by the USFWS prior to the beginning of the construction season. If piping plover nests are observed within the project area during construction, the contractor will be required to suspend all work immediately in the vicinity of the nests and notify the USFWS within 48 hours.

No other concerns were expressed by USFWS (see letter dated November 13, 2003, page 7-4) for threatened and endangered species or their habitat. Construction impacts to habitat would be limited and not effect the viability of any populations that may exist in the study area. USFWS has concurred in the findings (see letter dated November 18, 2003, page 7-9).

Impacts to State Rare Species: The NDPRD lists 173 state rare species. Sixteen species occur within Ward, Mountrail, and Williams Counties (See Figure B-10 in Appendices). Fourteen state rare species are listed as occurring within the counties traversed by US 2, but they are not listed as Federal T & E species. State species are not afforded special protection within North Dakota and have no regulatory status.

The 1999 field survey identified two rare plant species along US 2; i.e., the alkali sacaton (*Sporobolus airoides*) and the purple-leaved cinnamon willow herb (*Epilobium coloratum*). There were also several occurrences of the saw-toothed sunflower (*Helianthus grosseserratus*), a species recently removed from the state rare list. Because the plants are located on the existing roadway, all alternatives will effect the alkali sacaton and cinnamon willow herb located in the present ROW at mileposts 74.4 and 110.4, respectively (See Figure B-10 in Appendices). The South Alignment and North Alignment Alternatives will additionally impact the cinnamon willow herb at mileposts 50.3 and 60.1, respectively (See Figure B-10 in Appendices). These species are expected to be disturbed because of construction activities.

4.1.18 Historic and Archaeological Preservation

Results

Archaeological Sites: One hundred twenty-three sites were present within the APE. One Hundred and twelve are prehistoric sites, nine are historic sites, and two have both prehistoric and historic components. All archaeological sites within the proposed ROW and potential 50-foot-wide easements adjacent to the ROW, for all build alternatives, could potentially be impacted. Therefore, all sites within the proposed ROW, plus a 50-foot buffer, were recommended for evaluation for the potential to contain important information on the prehistory or history of the region.

Twenty-six archaeological sites were initially identified within the ROW, plus a 50-foot buffer, for the various alternatives. Of these, 21 are prehistoric archaeological sites, three are historic-period archaeological sites, and two have components of both (Table 4-6). The prehistoric component at one of the multi-component sites (32MN600) is well north of the project ROW plus 50-foot buffer. One of the prehistoric archaeological sites (32MN108) was not evaluated; a second site visit documented that it was well outside of potential impact. Another site, 32MN118, was not evaluated as the closest feature was at the outside edge of

the 50-foot buffer and the landowner denied permission to access the property. This site will not be impacted by any of the build alternatives. Evaluation of the remaining 24 sites was designed in consultation with NDSHPO. The sites were also discussed with many of the tribes.

Evaluation resulted in a determination, under Section 106 of the NHPA, that six prehistoric sites, none valued for preservation in-place, were eligible for the National Register of Historic Places. Sites 32MN110, 32MN116, 32MN119, 32MN522, 32MN525, and 32MN533 are eligible based on their information potential.

An elder and spiritual man, recognized for his expertise by the Standing Rock Sioux Tribe and the Three Affiliated Tribes, visited all of the potentially effected prehistoric stone feature sites along the entire project. Representatives of the Turtle Mountain Chippewa, the Tribal Historic Preservation Office and Intertribal Reinternment Committee, and an elder, who is looked upon as a spiritual leader, visited some of the sites.

All interested tribes have suggested that stone feature sites, in general, are very important to them. These features may be functional in nature (e.g., for use in holding down the edges of tipis) or ceremonial in nature. Regardless, the tribes recognized them all for their spiritual associations. Additionally, the tribes recognize the White Earth valley as a special place. The tribes indicated that we might expect to find a greater concentration of sites in the valley than along the rest of the project route. The valley was used, and continues to be used, by some tribal members for a variety of purposes. Because of landownership and cultural continuity issues, recent use has been limited. None of the Tribal contacts have previous knowledge of any of the stone feature sites prior to our visits.

Table 4-6.

Archaeological Sites within or near the ROW by Alternative

Site Number	South Alignment	North Alignment	Selective North - South Alignment ¹	Complete Alternative	Eligibility	Site Type
32MN89	Yes	No	Yes	Yes	Not Eligible	Historic Period Farmstead
32MN105 +	Yes	No	Yes	Yes	Not Eligible	Prehistoric Stone Circles
32MN106 ~	Yes	Yes	Yes	Yes	Not Eligible	Prehistoric Stone Circles
32MN108 ² +	No	No	No	No	Not Evaluated	Prehistoric Stone Circles
32MN109 ~	Yes	No	Yes	Yes	Not Eligible	Prehistoric Stone Circles
32MN110	Yes	No	Yes	Yes	Eligible	Prehistoric Stone Circle
32MN111	Yes	No	Yes	Yes	Not Eligible	Prehistoric Stone Circles
32MN113 +	Yes	No	Yes	Yes	Not Eligible	Prehistoric Stone Circles
32MN116	Yes	No	Yes	Yes	Eligible	Prehistoric Stone Circles
32MN117 +	Yes	No	Yes	Yes	Not Eligible	Prehistoric Stone Circles
32MN118	Yes	No	Yes	Yes	Unevaluated	Prehistoric Stone Circles
32MN119	Yes	No	Yes	Yes	Eligible	Prehistoric Stone Circles
32MN522	Yes	No	Yes	Yes	Eligible	Prehistoric Stone Circles
32MN525	Yes	Yes	Yes	Yes	Eligible	Prehistoric Cultural Material Scatter
32MN533	Yes	No	Yes	Yes	Eligible	Prehistoric Stone Circles
32MN534	Yes	No	Yes	Yes	Not Eligible	Prehistoric Cairns

Site Number	South Alignment	North Alignment	Selective North - South Alignment ¹	Complete Alternative	Eligibility	Site Type
32MN592 +	Yes	No	Yes	Yes	Not Eligible	Prehistoric Stone Circle
32MN600 *	Yes	No	Yes	Yes	Not Eligible	Historic Period Farmstead
32MN602	Yes	No	Yes	Yes	Not Eligible	Prehistoric Stone Circle
32MN607	Yes	No	Yes	Yes	Not Eligible	Historic Period Farmstead with 4 Prehistoric Cairns
32MN609	Yes	No	Yes	Yes	Not Eligible	Prehistoric Stone Circle
32MN611	Yes	No	Yes	Yes	Not Eligible	Historic Period Depression
32MN619	No	Yes	No	Yes	Not Eligible	Prehistoric Stone Circle
32MN626	No	Yes	No	No	Not Eligible	Prehistoric Stone Circle
32WI403	Yes	No	Yes	Yes	Not Eligible	Historic Period Farmstead
32WI453 #	No	Yes	No	No	Not Eligible	Prehistoric Stone Circle

1. Preferred Alternative.

2. Site was located well outside of the area of potential impact from the build alternatives.

* Prehistoric stone circles recorded as part of the site are south of the historic component will not be effected by the project.

+ and Cairn(s).

~ and Depressions.

|| Landowner access denied and closest feature at outside edge of 50' easement so evaluation not pursued.

Found during testing to be just outside the ROW and 50' easement.

None of the stone feature sites within the defined impact corridor are eligible for the National Register as Traditional Cultural Properties (TCPs) or for their information potentially related to tribal knowledge. This conclusion was reached in consultation with the tribes, the NDSHPO, and through review of guidance on TCPs. All stone features sites are, however, of general importance to the tribes. Avoidance of effects to stone features on this project will be pursued as aggressively as those sites eligible for the National Register. Mitigation of effects of the project on these resources shall be pursued in a manner that reflects the nature of their importance. Mitigation efforts have focused on avoiding as many stone features as possible, stock-piling stones from the disturbed features in an area near the project where they could be protected from further disturbance, and development of an education program for reservation schools on stone feature sites, their functions, and their spiritual connections.

Architectural Sites: The direct effects to historic properties and architectural sites for each of the proposed alternatives were evaluated. A direct effect includes direct impact to site features, as well as, the defined site areas around the features (for farmsteads this included yards and shelterbelts defining the farmyard).

Direct effects such as changing a site setting, increased traffic, and altering traffic use on county roads were found to be minimal for this project. The addition of two lanes to an existing highway will not change the setting of rural or urban sites along the highway route if there is no direct effect to the defined site area. The highway already exists, and it is likely the site settings will remain similar to what they are today.

Traffic on this segment of US 2 has shown a steady increase over the past ten years. Although future traffic projections expect this increase to

continue, anticipated traffic increases are expected to have little effect in terms of adjacent historic properties. Finally, there are no plans to alter county roads feeding into US 2 within the project limits. The addition of two lanes is not anticipated to effect a major change in local traffic patterns.

During the architectural inventory, 112 sites were identified within the defined area of potential effect for the project. Of these, the cultural resource contractor (URS), recommended that 88 were not eligible for listing on the National Register, and that 24 would require additional evaluative effort to determine eligibility. Of the 88 sites recommended as ineligible, NDSHPO has disagreed with the evaluation of two sites. Neither of these two sites, eligible for listing on the National Register of Historic Places, will be effected by the project. For Section 106 documentation, see Section 7.2 pages 7-5 through 7-10.

Of the remaining 24 sites, only four have potential to be effected by the project. Through SHPO review, one of the four has been determined to be eligible (32WI462), one has been determined ineligible, and additional evaluative work at the remaining two (32WD20 and 32WI477) was requested and completed. Both 32WD20 and 32WI477 were evaluated as not eligible for the National Register of Historic Places. The North Alternative would effect the one eligible site (32WI462).

Summary - Six prehistoric archaeological sites and one architectural site evaluated as eligible for the National Register are in or near the impact zone for the various build alternatives. Up to an additional 11 stone feature sites evaluated as not eligible for the National Register are also in or near the impact zone for the various build alternatives. Table 4-7 details potential impacts of the build alternatives based on presence within the proposed ROW plus 50-foot buffer.

An analysis of avoidance possibilities for build alternatives was undertaken by NDDOT. This was completed to show how effects to sites found eligible for the National Register and all stone feature sites could be minimized regardless of the alternative selected. The analysis showed that through creative context sensitive design (which includes restriction of the median, elimination of ditch bottom, and keeping back slopes at 1:1 - 3:1 at site locations) the effects of the project could be reduced to three sites (32MN113, 32MN119, 32MN525). This design would effect two stone features located at 32MN113, and 32MN119. An unknown number of buried features and artifact concentrations may be effected through 32MN525 where the eligible cultural component is buried 60-80 cm below the ground surface. Based on more accurate survey information, additional avoidance measures will be pursued during final design.

Because of the potential for undetected, deeply buried archaeological sites in the flat lands of the White Earth River, a North Dakota State-permitted archaeologist shall undertake monitoring of earthmoving activities through this stretch of the project. Because of the potential for encountering buried, previously unidentified archaeological remains along the entire project route (including various types of features, concentrations of artifacts, and burials), a plan to address important archaeological remains discovered during construction will be in-place prior to constructing this project. If any human remains are exposed, the contractor for this project will be responsible for implementing the state burial law by protecting the burial and by notifying NDDOT.

Detailed Tribal and Specific Site Information

None of the sites within the impact corridor are eligible for the National Register as Traditional Cultural Properties or for their information

Table 4-7 Summaries of Cultural Impacts

Alternative	Eligible Sites <u>Possibly</u> Effected	Stone Feature Sites <u>Possibly</u> Effected (Regardless of Eligibility)	<u>After Impact Analysis:</u> Sites Effected
<u>South Alignment</u>	<u>6 Prehistoric (32MN110, 32MN116, 32MN119, 32MN522, 32MN533, 32MN525)</u>	<u>16 stone feature sites</u>	<u>1 eligible buried site(32MN525)</u> <u>1 eligible stone feature site(32MN119)</u> <u>1 other stone feature sites(32MN111)</u>
<u>North Alignment</u>	<u>1 Architectural (32WI462)</u> <u>1 Prehistoric (32WI525)</u>	<u>4 stone feature sites</u>	<u>32WI462 would be effected.</u> <u>1 eligible buried site(32MN525)</u> <u>2 other stone feature sites(32MN106, 32MN619)</u>
<u>Selective North/South Alignment (preferred)</u>	<u>6 Prehistoric (32MN110, 32MN116, 32MN119, 32MN522, 32MN533, 32MN525)</u>	<u>16 stone feature sites</u>	<u>1 eligible buried site(32MN525)</u> <u>1 eligible stone feature site (32MN119)</u> <u>1 other stone feature sites(32MN111)</u>
<u>Complete Reconstruction</u>	<u>6 Prehistoric (32MN110, 32MN116, 32MN119, 32MN522, 32MN533, 32MN525)</u>	<u>17 stone feature sites</u>	<u>1 eligible buried site(32MN525)</u> <u>1 eligible stone feature site (32MN119)</u> <u>2 other stone feature sites(32MN111, 32MN619)</u>

Potentially related to tribal knowledge. This conclusion was reached in consultation with the tribes, the NDSHPO, and through review of guidance on TCPs. All stone features sites are of general importance to the tribes. Because these sites are important to the tribes, avoidance of effects will be pursued as aggressively as sites eligible for the National Register. In addition, mitigation of effects of the project on these resources shall be pursued in a manner that reflects the impacts and the

nature of their importance. This approach was discussed with the tribes, and NDDOT has received positive responses.

Impact analysis of avoidance possibilities for build alternatives was undertaken by NDDOT and presented to the tribes. They concur with NDDOT's avoidance analysis and have stated that NDDOT's efforts to avoid effects to the stone features are appreciated.

Site Information

Site 32MN105 The site was evaluated as not eligible for the National Register and was then disturbed by construction of US 2 along its present route. The feature nearest to the ROW was tested during the current project evaluative testing program. One flake of Knife River Flint (KRF) was recovered. The tested portion of the site was evaluated as not eligible for the National Register of Historic Places (National Register). Impact analysis suggests that effects from the project can be avoided through context sensitive design.

Site 32MN106 No cultural material was recovered from within the ROW. The tested portion of the site has been evaluated as not eligible for the National Register. There will be no effect to any features at this site because of the project.

Site 32MN109 The tested portion of the site has been evaluated as not eligible for the National Register. Impact analysis suggests that effects from the project can be avoided through context sensitive design.

Site 32MN110 The site is evaluated as eligible for the National Register for the information provided and clearly available from site deposits. Impact analysis suggests that effects from the project can be avoided through context sensitive design.

Site 32MN111 The site was evaluated as not eligible for the National Register. The lack of evidence of human remains in the cairn does not negate the validity of the Native American burial claim, and NDDOT considers avoidance of destruction of this feature important. Impact analysis suggests that the effects from the project can be avoided through context sensitive design.

Site 32MN113 Impact analysis suggests that construction would impact the single feature within the ROW. Cultural material was not recovered from this feature.

Site 32MN116 The site has been evaluated as eligible for the National Register. Impact analysis suggests that effects from the project can be avoided through context sensitive design.

Site 32MN117 The tested portion of the site has been evaluated as not eligible for the National Register. Impact analysis suggests that effects from the project can be avoided through context sensitive design.

Site 32MN118 The site has not been evaluated for National Register eligibility. There will be no effect to the site from the project.

Site 32MN119 The site is eligible for the National Register for the information provided and clearly available from site deposits. Impact analysis suggests that direct impact to the stone circles may be avoided; however, the linear cairn will be effected.

Site 32MN522 The site is eligible for the National Register for the information provided and clearly available from site deposits. Impact

analysis suggests that effects from the project can be avoided through context sensitive design.

Site 32MN525 The site is eligible for the National Register for the information provided and clearly available from site deposits. Effects of the project on this resource cannot be avoided.

Site 32MN533 Impact analysis suggests that effects from the project can be avoided through context sensitive design.

Site 32MN534 The site was evaluated as not eligible for the National Register.

Site 32MN592 The site has been evaluated as not eligible for the National Register. Impact analysis suggests that effects from the project can be avoided through context sensitive design.

Site 32MN602 The site has been evaluated as not eligible for the National Register. Impact analysis suggests that effects from the project can be avoided through context sensitive design.

Site 32MN607 The site is not eligible for the National Register.

Site 32MN609 The site has been evaluated as not eligible for the National Register. Impact analysis suggests that effects from the project can be avoided through context sensitive design.

Site 32MN619 The site was evaluated as not eligible for the National Register. Our Native American contact that visited the site suggested an affiliation with the sweat and thought we should not effect it. The site would be within the ROW of the North Alternative. Impact analysis of the

potential to avoid the effect if the North Alternative is chosen has not been conducted.

Site 32MN626 The tested portion of the site has been evaluated as not eligible for the National Register. It is likely that the project could be designed so as to avoid effects to this site if the North Alternative is chosen.

Site 32WI453 Detailed mapping during evaluative testing illustrated that all features are outside both the ROW and the possible temporary construction easement. The tested portion of the site was evaluated as not eligible for the National Register. The site will not be effected by the project.

Site 32WD20 ND SHPO believed this site could very likely be eligible for the National Register under Criterion B for its association with Joiner. Further evaluative effort showed that Mr. Joiner owned the land as an investment, not as a residence or place of business, and that this investment was not made during the most productive period of Joiner's life. Because of this, the site has been evaluated as not eligible for the National Register.

Site 32WI462 The North Alternative would result in removal of the southern boundary fence and the 1900 house. The house presently rests on a temporary concrete block foundation. The southern boundary fence is a modern barbwire fence located on the ROW.

Site 32WI477 ND SHPO believes the site is not eligible for the National Register of Historic Places under Criteria A, C, or D. Further information was needed on Horace Stevens to determine eligibility under Criterion B. This evaluation showed that Mr. Stevens' productive years were not

associated with the remaining structures at the site, and therefore, the site is not eligible for the National Register under Criterion B.

4.1.19 Hazardous Waste Sites

Hazardous waste sites may include landfills, hazardous waste storage facilities, and storage tanks with potential clean-up activities occurring or pending. The following discussion pertains to the existence of sites along US 2 and the potential concerns associated with these sites.

Site Screening – An Environmental Transaction Site Screening (ETSS) was conducted along US 2, which included a search of the NDDH, Division of Waste Management files and a visual survey. The ETSS provided a baseline of information regarding the sites that exist. The intent of the ETSS is to reduce, but not eliminate, uncertainty regarding the potential for recognized environmental conditions in connection with the sites identified. The ETSS is limited since it did not include a property title search for historical use information, property owners were not contacted, and safety and health practices associated with property uses were not addressed.

Site Identification – The survey completed September 14, 2000, identified a number of potential sites. The NDDH Division of Waste Management also responded to a subsequent request for a list of environmental issues within one-fourth mile of the existing US 2 (NDDH, 1999). No field-testing was done to verify these NDDH sites, so only a general site location is known. Based on an examination of the NDDH files, the following information was obtained:

- Stanley's former municipal solid waste (MSW) facility is near the north US 2 ROW in the NE¹/₄ of Section 27, Township 156 N, Range 91 W, but beyond the proposed ROW for the North Alignment Alternative and is unaffected by each of the build alternatives:
- Ray's former MSW facility a quarter-mile to a half-mile from US 2 on the quarter line of Section 16, Township 156 N, Range 97 W is unaffected by each of the build alternatives. Berthold's former MSW facility is a quarter-mile to a half-mile from US 2 on the north quarter line of the SW¹/₄ of Section 21, Township 156 N, Range 86 W and is unaffected by each of the build alternatives;
- There are no Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) events on the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) list of Superfund sites "within the quarter-mile";
- There are no permitted hazardous waste storage facilities "within the quarter-mile";
- There are no Resource Conservation Recovery Act (RCRA), CERCLA or State environmental clean-up activities "within the quarter-mile"; and
- The NDDH identified Leaking Underground Storage Tank (LUST) sites. Sites near the existing US 2 highway that are indicated as open investigations include the Cenex (formerly known as Farmers Union Oil Company) in Berthold; A and D Service Repair Center in Berthold; and Judd's Standard in Stanley. Only the Cenex is known to be near or adjacent to the proposed ROW for each of the build alternatives. However, ROW will be acquired to the north of the existing roadway so the Cenex site will not be impacted.

- Fuel storage tanks will require removal and relocation. The known fuel storage tank requiring removal or relocation for the South Alignment and Selective North-South Alignment (preferred) Alternatives is located at an abandoned gas station (MP 52.72). The known fuel storage tanks requiring removal or relocation for the North Alignment Alternative are located at a bulk storage facility (above ground tanks at MP 54.23) and at a farmhouse with above-ground bulk storage tanks (MP 64.05). The remaining build alternative, Complete Reconstruction does not require fuel storage tank relocations.

Based on the information gathered in this ETSS, it appears that the potential for additional hazardous waste sites near the project is very low. Because of the low potential for additional impacts resulting from any of the alternatives, no further investigation into the existence of hazardous waste sites along US 2 is needed. NDDOT's Standard Specifications for Road and Bridge Construction address the proper handling of hazardous materials if any are discovered during the construction.

Mitigation Measures for Environmental Sites – It appears that the South Alignment and Selective North-South Alignment (preferred) Alternatives will require removal of underground fuel storage tank at the abandon gas station west of Ray (MP 52.72). Prior to construction the site will be subjected to a Phase I and initial Phase II Environmental Site Assessment (ESA) investigation. The Phase I ESA will consist of a thorough review of the property records and regulatory information to determine whether hazardous chemicals were used at the site. It may also include personal interviews with the present and previous property owners about the use of the site. An initial Phase II ESA will be completed only if there is evidence of the inappropriate use of hazardous chemicals. This could

include testing to confirm the presence or absence of contaminated materials.

The North Alignment Alternative will require the removal or relocation of above-ground fuel storage tanks located at a bulk storage facility and at a farmhouse. Prior to construction the sites will be subjected to additional investigation similar to what was indicated for the underground tanks in the previous paragraph.

4.1.20 Visual Impacts

All build alternatives will occur within the existing highway corridor. The existing corridor primarily crosses agricultural land that is under cultivation. Motorists will continue to view the rolling farmland and pasture land. Scattered throughout the farmland and current ditches are numerous wetlands. Some of these wetlands will be eliminated during construction and others will be reduced in size. After construction is complete, many of the impacted wetlands will be reestablished in the new ditch as part of the mitigation and other wetlands will likely be established in and adjacent to the new ditches where water accumulates. Motorists will still be able to view many wetlands along and adjacent to the roadway that will not be impacted by the project and within a year or two after construction; the reestablished wetlands will match the non-impacted wetlands. The view of the adjacent land from the roadway will essentially remain the same for all build alternatives.

During construction, the vegetation and topsoil will be striped from the ROW leaving the old ditch on one side of the road and the new ditch bare. At the end of construction, the topsoil will be replaced and reseeded. Within a year or two, the ROW will again be fully covered with vegetation

and will essentially look like it does now. In several areas, trees will be removed from the new ROW to accommodate construction.

Many of these trees are in rows that were planted for windbreaks. Removal will typically consist of removing a short section (100 to 150 feet) of trees out of rows that are typically one-half mile in length. The visual impact will not be noticeable after construction is completed. In several locations, the trees to be removed are in the small valleys or draws that intersect the roadway. Construction of any of the build alternatives will require removing that portion of the trees that will be in the new ROW, leaving the remainder looking nearly the same as it currently is.

The asphalt roadway section will be widened from 38 feet wide to 76 feet wide. This additional asphalt will be separated from the existing asphalt section with a grass median along the majority of the route. Several hills will be cut back further to accommodate the new roadway; these hills will essentially have the same look as they do now. The new roadway will match the current roadway profile and will remain visible from adjacent property in the same locations as the current roadway is.

Because all build alternatives studied include construction of a new roadway within the current roadway, they will all have similar visual impacts. Other than the road section will be doubled in width, the visual impacts of the final road remain essentially the same as it exists today, as will the view from the road.

Context sensitive design principals will be applied to the portion of the project through the White Earth River valley. A narrower (54-foot centerline-to-centerline) section will be constructed to minimize wetland and cultural impacts. The 54-foot section will only slightly change the view of the roadway after the ground cover has been reestablished. The

no build alternative will result in only temporary changes to ditch vegetation as widening and inslope work occurs on the west 22 miles. Once the vegetation is reestablished, the view of the roadway will be the same.

4.1.21 Energy

Energy consumption for the build alternatives is primarily associated with the use of fossil fuels for the construction of pavement, the operation of vehicles and equipment during construction, or the operation of vehicles following construction. The types of fossil fuels include gasoline, diesel fuel, and lubricating oils in vehicles using the highway during operation and the equipment used to construct each build alternative.

The energy use associated with construction is a short-term impact, not associated with operational use of the highway. The energy use associated with the operation of vehicles following construction is not expected to differ among the build alternatives. The reason is that the traffic patterns following construction are expected to be similar for each build alternative.

4.1.22 Construction Impacts

Most impacts related to construction are short-term and temporary. These impacts tend to occur in localized areas as construction progresses. Construction-related impacts may also occur at borrow and disposal sites needed for roadway construction. Suitable borrow sites and aggregate sources will be identified by NDDOT. The contractor will be responsible for selecting the appropriate borrow sites and aggregate sources, subject to approval by NDDOT. NDDOT has proceeded with design of one of the project sections; however, this design was not permitted to influence the

NEPA process. Before the plans are finalized, they will be adjusted to correspond to the final environmental requirements.

Expectations are that the borrow sites will be located near US 2 and the aggregate sources will be in the area. The disposal of construction materials will not occur within wetlands or waterways. Aggregates will not be mined in riverine areas. Wetlands impacts typically do not occur at borrow sites because the soil is usually not desirable for road construction. However, occasionally a large borrow site may contain small isolated wetlands. Any wetlands that cannot be avoided in borrow sites will be treated the same as wetland impacts within the ROW and will be mitigated with the same considerations. The same will apply to small isolated wetlands located in an aggregate pit mined for this project.

Social – A number of construction-related social impacts are possible. Impacts for the Complete Reconstruction Alternative include the disruption or blockage of access to property or other travel corridors, frustration by drivers because of the temporary disruption in traffic flow, delays and detours, potential travel over rough and dirty surfaces, the delay of emergency response services, and restricted access to agricultural land. The other build alternatives will have some of the same social impacts but to a lesser degree.

A traffic management plan will be developed and implemented to provide reasonable access to residences, businesses, farms, community services, and local roads during construction. To minimize delays for emergency vehicles, NDDOT will coordinate construction activities, sequencing, and traffic management plans with local fire, police, emergency rescue, school administrators, and local postal carriers. During construction, traffic flow will be maintained to the maximum extent possible.

Economic – Considerable construction activity will take place when US 2 is upgraded. The economic stimulus brought about by this activity is temporary, but realized in direct employment (construction workers) and direct income earned by the construction workers, as well as the purchase of construction supplies and materials. Additional impacts associated with construction include those created by suppliers' employment and income and the spending of construction workers' income. The temporary economic stimulus for all build alternatives is expected to be about equal for all build alternatives, except the Complete Reconstruction Alternative. Because the complete reconstruction alternative is estimated to cost nearly twice as much as all other build alternatives, it is expected that the temporary economic stimulus will be almost double that of the other build alternatives.

Economic impacts during construction may also include the use of alternative routes to communities and businesses by drivers. This type of economic impact is expected to be greatest for the Complete Reconstruction Alternative compared to the other build alternatives. The Complete Reconstruction Alternative requires obliteration and removal of the existing roadway prior to reconstruction of the new roadways. Unlike the other build alternatives, this will require detours between the communities and the probable loss of accessibility to some businesses.

Air Quality – Material processing operations, including crushing and asphalt plants, will impact air quality. During the construction phase, the primary pollutant, PM₁₀, will result largely from the creation of dust, the use of diesel powered construction equipment and the milling of existing bituminous. The primary pollutant, CO, will result from the operation of diesel or gasoline-powered construction equipment. Regardless of the build alternative, the construction process will temporarily effect air quality due to the use of construction equipment, such as dozers, scrapers,

backhoes, sheep's foot compactors, roller compactors, pavers, and the resulting disturbance of soils.

The construction-related air quality impacts are anticipated to be greater than the post-construction impacts. However, it is expected that the apparent impacts of each build alternative will be negligible and not result in violations of air-quality standards, as methods to offset the impacts are implemented. The construction-related impacts are expected to be greater for the Complete Reconstruction Alternative than the other build alternatives. This alternative requires milling bituminous from the existing roadway and demolition of the existing roadbed, prior to replacement. Therefore, two new roadbeds must be constructed.

Methods implemented during construction to mitigate air quality impacts may include using modern construction equipment with exhaust systems meeting federal and state pollution-control requirements, wetting disturbed soils to prevent wind-blown dust, and applying calcium chloride to the base aggregate to prevent dust problems. Dust control will be accomplished in accordance with the current practices of NDDOT. This typically requires the application of water or other approved dust-control measures during grading operations and on haul roads. The location and operation of asphaltic batch plants will be in accordance with air-quality provisions and requirements of the NDDH.

Noise – Short-term construction noise impacts will be unavoidable at locations near the construction sites. Actual noise levels produced at a given location will vary considerably, depending upon the number of pieces of machinery being operated, the amount of time the equipment is operated and the distance from the machinery. To reduce construction noise impacts, special provisions in the construction contract will require motorized equipment to comply with applicable local, state and federal

laws and regulations governing permissible noise levels within and adjacent to the construction area. All construction equipment will be required to have mufflers constructed in accordance with the equipment manufacturer's specifications or a system of equivalent noise-reducing capacity. It will also be required that mufflers and exhaust systems be maintained in good operating conditions free from leaks and holes.

Water Quality – Potential pollutants present in highway runoff differ between construction and post-construction. Sediment and chemicals attached to sediment particles are the primary pollutants present during construction. This includes suspended sediments, total phosphorus associated with the suspended sediment, various forms of nitrogen, and oxygen demanding substances. There is also the potential for the spill of construction-related fluids like oils and gasoline. Because the erosion control and storm water management practices used during construction will be the same for each alternative, the build alternatives do not differ relative to the construction-related water quality impacts. The use of erosion control and storm water management practices during construction is expected to prevent exceedances of the State Water Quality Standards.

Construction water quality issues will be addressed by developing a storm water management plan. The plan will comply with the NPDES construction storm water requirements and be developed when the construction plans and specifications are prepared. The plan will identify erosion control measures for construction. These measures may consist of the use of temporary and permanent erosion control practices, including silt fences, retention basins, detention ponds, interceptor ditches, temporary seeding, mulching, sodding, stabilization of excessive cuts, the use of riprap, and the use of geotextiles. Special provisions implemented during structure construction, may include the use of silt barriers and floating debris barriers.

Wetlands – Grading and road construction may result in the temporary placement of fill in some wetlands and the disturbance of vegetation. These short-term impacts include the temporary placement of fill, minor changes in flow patterns, and impacts associated with construction. The filling and draining of wetlands will be avoided during the construction process where possible.

Erosion-control measures identified by the storm water management plan will reduce the likelihood of temporary adverse wetland impacts from sedimentation. Contractors will be required to submit a plan outlining the proposed construction measures, techniques and equipment.

Water Body Modifications and Wildlife – Construction-related sedimentation impacts to aquatic habitat for each build alternative should be minimized by the development and implementation of a storm water management plan, as required by the NPDES construction permit. Some temporary disturbance, displacement, and mortality of wildlife species are expected.

Threatened or Endangered Species – Mortality to piping plovers from the use of denuded construction areas is not expected. To minimize the likelihood of piping plover mortality, a monitoring plan will be prepared by NDDOT for approval and concurrence by the USFWS for construction related piping plover monitoring.

Historic and Archaeological Preservation – Borrow sites and other land used for the project including haul roads, batch sites and waste areas will be cleared by a NDDOT archeologist prior to use. The contractor will be required to avoid the exterior fence adjacent to the ROW of Site 32WI462 for the Complete Reconstruction Alternative.

4.2 Cumulative Impact Analysis

Cumulative impacts result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal, or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time (40 CFR 1508.7). Cumulative impacts to these resources are evaluated by describing the past, present, and reasonable foreseeable activities occurring within the area with the potential to effect these resources. Types of activities potentially leading to cumulative impacts within northwestern North Dakota from the past, present, and in the reasonably foreseeable future include:

- The initial settlement of the region and the continued urbanization of cities and rural areas;
- Agricultural development and continued agricultural practices;
- Oil and gas development;
- Local, state and federal transportation improvements; and
- Federal resource programs.

A description of these activities and their importance follows:

Past Activities – Past impacts to the resource are primarily related to the settlement of the region. Where cities developed, how people made a living, and people's daily activities were historically tied to the coming of the railroad and agriculture.

The Great Northern Railway founded Minot, the fourth largest city within North Dakota, in 1887. In the summer of 1886, the St. Paul, Minneapolis, and Manitoba Railroad completed 122 miles of new track west across the rolling plains. The activity resulted in speculation that the railroad was headed for the

West Coast and that where the rails met the Missouri River a good town (Williston) would be established. In 1887, the city of Williston also sprang from the developing railroad. In 1889, North Dakota became the 39th state.

Development of the area for agriculture is an important historical activity that presently effects resources within the area. Spurred by the 1862 Federal Homestead Law, the Dakota Territory was opened to homesteading in 1863. Farming settlement developed gradually after the first claim west of the Red River was filed in 1868. Significant immigration occurred as the westbound Northern Pacific Railway was built to the Missouri River in 1872 and 1873. Along and near its line, new towns sprang up to serve the settlers, the track-laying crews, and others.

Resources within the western portion of the project area have been influenced substantially since the discovery of oil and natural gas within the Williston Basin in the early 1950s. Oil was discovered in the Williston Basin on April 4, 1951. This was the first major discovery in a new geologic basin since before World War II. By May 20, 1951, 30 million acres of North Dakota were under lease for oil development.

Present and Future Activities – Agriculture, people moving within the region from rural to urban areas, oil and gas development, and state and federal programs aimed at habitat preservation are the most important present and future activities effecting resources within the northwestern portion of North Dakota. Agriculture is expected to remain the dominant land use into the foreseeable future, with the acreage under cultivation likely to remain stable.

The general demographic trend within the region is a movement of people from rural areas and rural communities into the regional population centers of Minot

and Williston. Increased urbanization at the edge of these regional population centers is anticipated.

Oil and gas activities primarily effect the western portion of the project area. As oil and gas prices increase, extraction of these resources within North Dakota becomes more profitable. Therefore, the present and future trend is increased development and production.

Air Transportation Plans – The city of Stanley is proposing a new runway, just south of the existing US 2. Information about the planned expansion is identified in a letter from the Federal Aviation Administration (FAA) and the North Dakota Aeronautics Commission (Holzer, 2000). The FAA has indicated that they must be notified of the specific construction plans, as required by the Federal Aviation Regulations (FAR), Part 77, Objects Effecting Navigable Airspace, Paragraph 77.13 (FAA Form 7460-1). None of the build alternatives is contrary to the proposed runway.

Wetlands – The cumulative loss of wetlands is a concern with many local, state, and federal resource agencies. Nationally, the conversion of wetland to cropland for agricultural purposes² is believed to be the primary reason for the wetland loss, although there is some disagreement. Frayer, et al., (1989) estimated that 87 percent of the wetland loss nationally between the mid-1950s and the mid-1970s resulted from agriculture. However, the USDA estimated agriculture was responsible for less than 25 percent of the wetland loss nationally.

An estimated 4.9 million acres of wetlands were present in North Dakota in 1780 (Dahl, 2000) compared to the 1982 (most current) estimate of 2.7 million acres

² Wetland loss from agriculture includes the activities associated with using the land for the production of food and fiber; i.e., horticultural crops, row crops, hay and pasture, farm infrastructure, and animal production facilities. Because of its importance, it seems likely that agriculture is the primary reason for the loss of wetlands within North Dakota.

(NDPRD, 1987). The most extensive wetland loss within North Dakota, an estimated 1.2 million acres, has occurred along the eastern border of the Agassiz Lake Plain Region (NDPRD, 1987).

Future wetland loss rates are difficult to predict. Many agencies have established a “no-net loss” policy. Whether the future wetland loss rate reflects this policy is unknown. Future loss rates within North Dakota and the northwest region of North Dakota will be influenced primarily by agricultural practices and the USDA farm bill and changes within the wetland regulations administered by the ACOE. Some agencies including the USFWS are actively restoring wetlands. Wetland losses may occur as development continues on the fringes of Williston and Minot. However many developments are designed to protect wetlands and incorporate them into the development, rather than draining and/or filling them. Williston in particular has a large number of vacant homes as a result of the “bust” of the oil boom in the early 1980’s. Due to the reduced listing prices of these homes, most of the new inhabitants are anticipated to utilize the existing structures. Additionally, wetlands located along the Missouri and Little Muddy Rivers are protected and monitored by the ACOE.

Development on the fringe of Minot may impact wetland areas primarily along the Souris River and in surrounding bedroom communities. Additional development of bedroom communities may also result in wetland impacts. Maintaining these wetlands is often a goal of individuals purchasing or building homes. The abundant wildlife associated with these wetlands is desired and may enhance the value and beauty of their property.

The State of North Dakota and FHWA each have a policy of no net loss of wetlands resulting from highway construction. Therefore, any wetland acres that are impacted on any highway work in the state are mitigated by restoration or creation in appropriate locations and ratios. Currently, NDDOT is reconstructing a 40-mile stretch, US 52 from the intersection with US 2 (east end of this project)

north to Kenmare. Forty-three acres of wetlands were impacted on that project, all of which are being mitigated in and adjacent to the existing road corridor. ND 23 is being reconstructed from the Lake Sakakawea crossing to eight miles to the west is being reconstructed. There were 3.1 acres of wetland impacts associated with that project that were mitigated at a wetland bank west of New Town.

NDDOT worked with USFWS and the NDGFD to establish wetland banks for mitigation of wetland impacts that cannot be mitigated on site. Currently, NDDOT is working with several landowners across the state, including this area of the state, for suitable locations for establishing additional wetland banks. These banks are also used to mitigate wetland impacts that occur on county road construction projects.

In addition to these reconstruction projects, NDDOT typically places 140 miles of asphalt/aggregate chip seals on the state highway system in this area of the state each year. These chips seals are applied to the road surface only, and impacts off the road are limited to impacts associated with mining of the aggregate chips.

Oil and gas exploration and development are expected to have minimal impact on wetlands. Any impacts from oil and gas development (i.e. , pipeline construction or oil spills) would likely be temporary.

Farmland – Farmland impacts (rangeland and cropland) for the proposed improvements to US 2 range from 1,049 acres to 467 acres. The Preferred Alternative will impact 550 acres of farmland. This farmland will be taken out of cropland and rangeland and converted into ROW. The adjacent landowners in areas that are not designated as managed-mow, typically hay the ROW. A plan is being developed to eventually remove the managed-mow restrictions from the ROW of this project thereby allowing adjacent landowners access to all the hay.

The importance of prime farmland is reflected in the Farmland Protection Policy Act of 1981. The purpose of the Act is to minimize impacts on farmland and maximize the compatibility with local land use plans. The National Resource Conservation Service (NRCS) monitors prime farmland. An estimated 11,853,600 acres of prime farmland was present in North Dakota in 1982 compared to the 1997 estimate of 11,749,000 acres (NRCS, 2001), less than a one percent decline in 14 years. The rate of prime farmland loss in North Dakota in the foreseeable future is also likely to be small, based on the period between 1982 and 1997.

Prime farmland impacts for the proposed improvements to US 2 range from zero for the No-Action Alternative to 55.3 acres for the North Alignment Alternative. Given the present and future trend in prime farmland, no significant cumulative impacts to prime farmland from build alternatives are anticipated. There is no plan to mitigate prime farmland losses on this project. Currently, across the state there are very few plans for expansion of any roadways beyond this project. Therefore, prime farmland impacts from future highway projects are expected to be minor.

Oil and gas exploration and development may impact small amounts (one to three acres per oil well) of prime farmlands. As oil wells dry up, the sites are reclaimed and the land put back into previous use. Pipeline construction could also have temporary impacts on prime farmlands.

People migrating from the rural areas to the cities may impact prime farmlands adjacent to the cities as urban development expands. In North Dakota, urban development is primarily limited to the largest cities such as Minot and Williston. On the other hand, many abandoned farmsteads are being reclaimed for farming thereby increasing the amount land being farmed.

Native Prairie – The cumulative loss of native prairie is of concern to a variety of agencies, primarily the USFWS and the NDGFD. Mixed grass prairie historically covered the majority of North Dakota, including the project area. An estimated 35,088,200 acres of mixed grass prairie originally occurred in North Dakota, compared to the recent estimate of 11,119,500 acres, a decline of 68.3 percent (Samson and Knopf, 1994). The conversion of land use from native prairie to agricultural is the reason for the historic decline in acreage.

Several remnant pockets of mixed grass prairie are impacted by the build alternatives. The estimated impact to native prairie ranges from zero acres for the No-Action Alternative to 3.3 acres for the North Alignment Alternative. Because these native prairie areas are so small, they maintain little of their original ecological function.

Native grasses will be planted in the disturbed ROWs. They will be replacing introduced grass species such as brome. NDDOT has been planting native grasses in disturbed ROW for over 20 years. It has been found that native species have an easier time of reestablishing themselves in the disturbed ROW. Currently, across the state there are very few plans for expansion of any roadways beyond this project. Therefore, impacts from future highway projects on native grasses are expected to be minor.

The future rate of mixed prairie acreage loss in North Dakota in the foreseeable future is likely to be small. The amount of native prairie is related to the amount of cultivated prime farmland for agriculture. Little new land is coming into agricultural production. Given the present and future trend in mixed native prairie acreage, no significant cumulative impact from the proposed improvements to US 2 is anticipated.

Oil and gas exploration and development in the badlands area of the state may impact small amounts of native grasses. Access roads and pipeline construction could also impact native grasses. People migrating from the rural areas to the cities is not likely to impact native grasses, because very little native grasses remain in areas adjacent to the cities.

Cultural Resources - Although there are many cultural resource sites within the initially defined APE, only a few of these are potentially effected by the build alternatives. Twenty-six archaeological sites were initially identified, within the proposed ROW and a 50-foot buffer, for the various alternatives. Of these, 21 are prehistoric archaeological sites, three are historic period archaeological sites, and two have components of both (Table 4-6).

Evaluation of the sites was designed in consultation with NDSHPO. See 4(f) documentation in the appendices for Section 106 documentation. The sites were also discussed with many of the tribes. None of these eligible archaeological sites are valued for preservation in-place. All are eligible for their information potential. These sites will be avoided to the maximum extent possible, and where avoidance is not practicable, their information content will be preserved.

Many cultural resource sites are located in areas that are being farmed. While some surface disturbance has occurred where cultivation has taken place, the subsurface features remain intact. If and when the oil industry expands in the area, some of the sites located in the farmland will likely be impacted as access roads and oil well sites are constructed. People migrating from the rural areas to the cities may impact some cultural resources that are located in the areas of urban development. This migration will also result in abandonment of old farmsteads. These farmsteads will eventually fall into disrepair or be reclaimed for farmland.

The roadway system statewide is in constant need of maintenance. Maintenance often requires the use of aggregates. As these aggregates are mined, it is possible

that some buried cultural resources may be disturbed or destroyed. Any of the aggregate pits mined for a road construction project, which has any federal dollars involved, has to have a cultural resource survey prior to opening the mine. If cultural resources are found, they must be properly removed or protected from disturbance.

4.3 Secondary Impacts

Secondary or indirect impacts are defined as those “caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable” (40 CFR150.8). This kind of impact is typically considered an effect indirectly caused by or induced by construction of the proposed project. Secondary impacts of transportation projects are generally associated with increased development or shifts in development or shifts in development that occurs in proximity to the project and because of the project.

Transportation impacts have the potential to alter existing and future land use trends, depending on the type of improvement and the condition of the existing transportation system. Factors other than transportation facilities that are considered in development decisions include cost and availability of developable land, availability of jobs and housing, availability of sewer and water facilities, and zoning regulations.

Most of the land through which the project passes is utilized for agricultural purposes. All reasonable alternatives are in or adjacent to an existing roadway, minimal impacts are expected, and agriculture would remain the primary land use.

An increase or shift in the development within the project area is expected to be minor or non-existent because of the proposed project. The region is overwhelmingly rural with most land devoted to agriculture with several small communities along the project route. The land use adjacent to US 2 in the

communities of Ray, Ross, Stanley, and Berthold is commercial and industrial with a small amount of residential. These communities constitute a very small percentage of the general landscape of the project area. These communities have been losing population and business over the last 40 years. Excess infrastructure exists in these communities resulting from the “bust” of the oil boom in the 1970’s and early 1980’s. This infrastructure can be described as homes, commercial buildings, workshops, storage facilities, utilities, and developed commercial and residential lots within their city limits. The proposed project will not be a catalyst to a change in land use in these areas. In the event of any minor growth, the excess capacity of housing and commercial properties would allow for infill opportunities in these towns. Because of this excess infrastructure, any secondary growth resulting from this project will have minor additional environmental impacts.

A minor change in some land use may occur locally within select areas near Minot and Williston. Residential development and commercial and industrial facilities have been moving towards the boundary of these cities. The proposed project is not expected to alter the existing development patterns. Any development near Minot or Williston will be subject to existing local zoning ordinances and land use plans. US 2 is currently four-lane adjacent to Williston (from four miles west of Williston to the beginning of this project, 12 miles north) and Minot (from the end of this project, 13 miles west, to past the Minnesota boarder to the east).

The pavement surface will increase from approximately 500 acres to 940 acres. This will result in an increase in use of sand and salt, which will eventually end up in the ditch, either from highway runoff or with the accumulations of snow deposited by snowplows. NDDOT uses snowplows to remove the snow from rural roadways and uses a sand-salt combination in limited areas (i.e., at major intersections and hills) when the roadway is icy. Because NDDOT uses sand and salt sparingly in rural areas, the long-term secondary impacts of the added surface

area are expected to be minimal. Other chemicals typically washed off the road surface come from the vehicles using the road. Types and quantities of those chemicals are dependant on the volume and types of vehicles using the road, not on the roadway surface. Therefore, secondary impacts from this type of runoff are not anticipated to change from the build alternatives vs. the no-build alternative.

4.4 Relationship Between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

Any alternative involves short-term and long-term tradeoffs. Within the context of this discussion, "short-term" refers to the immediate consequences of the project, while "long-term" refers to its direct or indirect effects on future generations.

The short-term consequences to the environment include:

- Various levels of localized air, noise and runoff during construction;
- Disturbance and disruption to businesses, homes, and farm operations as a result of construction;
- Inconvenience to motorists using US 2, during construction;
- The temporary impacts to agricultural land, shelterbelts, and wetlands during construction;
- Change in the location or the amount of habitat, depending upon how mitigation is accomplished and the degree of success;
- Relocation of people. Expenses would be incurred as these people are compensated. Social and economic hardship may occur even with financial compensation;
- Commitment of public funds to build the facility.

Some long-term benefits, which may be realized from this project, are:

- Continuity of US 2 throughout North Dakota;
- Safer roadway;
- More reliable roadway;
- Continued economic viability of residents and small communities within the project area;
- Maintaining the social fabric of northwestern North Dakota;
- Greater financial stability of existing businesses dependent upon the transportation system.

4.5 Irreversible and Irretrievable Commitments of Resources

Implementation of the proposed action involves a commitment of a range of natural, physical, human, and fiscal resources. Land used in the construction of the proposed facility is considered an irreversible commitment during the time-period that the land is used for a highway facility. However, if a greater need arises for the use of the land, or if the highway is no longer needed, the land can be converted to another use. At present, there is no reason to believe such a conversion will ever be necessary or desirable.

Considerable amounts of fossil fuels, labor, and highway construction materials such as bituminous material and aggregate are expended. Additionally, large amounts of labor and natural resources are used in the fabrication and preparation of construction materials. The materials are generally not retrievable. However, they are not in short supply, and their use will not have an adverse effect upon continued availability of these resources. The additional land required for new ROW will be removed from current residential, commercial, agricultural, and industrial uses. Any construction will also require a substantial one-time expenditure of both state and federal funds, which are not retrievable. Finally, design and construction of this project will consume considerable person-hours of human resource that could be applied to other issues within the region.

An improved US 2 results in a commitment of these resources based upon the concept that residents in the immediate area, region, and state will be able to better maintain the economic viability of their communities.

4.6 Summary of Mitigation Measures and Environmental Commitments

The details of the proposed mitigation measures are described following the discussion of environmental consequences by resource. The U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service will be consulted on development of mitigation measures. A summary of the proposed mitigation measures includes:

- Continue efforts to avoiding and minimizing wetland impacts to the extent practical. Prepare and obtain approval of a mitigation plan describing how unavoidable wetland impacts are to be mitigated.
- Develop a storm water management plan in accordance with NPDES construction permit requirements and require a contractor develop Spill Prevention Countermeasure Control (SPCC) plan.
- Complete and obtain approval of a piping plover construction monitoring plan, as requested by the USFWS.
- Implement measures for cultural impacts including mitigating the effects to stone feature sites considered important to Native American tribes.
- Mitigate National Register eligible sites completed in accordance with the National Historic Preservation Act;
- Monitor cultural resources during construction within the White Earth River Valley.
- Implement dust control during construction.
- Comply with floodplain encroachment standards.
- Employ Context Sensitive Design principles to the portion of the project through the White Earth River Valley to minimize impacts.

- Complete the MOA on the managed-mow area mitigation with the resource agencies.

4.7 Wetland Findings

The proposed project passes through the prairie pothole region of North Dakota, which has an abundance of wetlands. These wetlands are predominately glacial depressions filled with spring runoff from melting snow. Because of all the wetlands (382 sites within 300 feet of current roadway), it is nearly impossible to construct a long road project without some wetland impacts. The Select North-South Alignment Alternative (preferred) is adjacent to the current roadway, will not cross any new wetlands, and will not alter drainage patterns.

The majority of the impacted wetlands (72.86 of 79.84 acres) occur to non-jurisdictional, isolated wetlands. Sixty five percent, of these isolated wetlands, contain water only temporarily or are typically wet in the spring to early summer season only. Many of these seasonal-type wetlands are hayed every year and some are occasional cultivated. The remaining 35 percent, of these isolated wetlands, are permanently flooded and have well-established vegetation. None of the permanently flooded wetlands will be completely filled. Most of the wetland impacts will occur within the current ROW.

Modifications that were incorporated to avoid or minimize impacts included: Staying on the existing alignment to avoid impacts to previously undisturbed wetlands. Studying of alternative alignments to compare estimated impacts. Reduced median width and steepened inslope at sensitive locations. Adjusted roadway alignment (location of new lane) to avoid wetland impacts where possible.

The remaining impacts cannot be avoided without incurring excessive costs or jeopardizing public safety. Based upon the above considerations, it is determined that there is no practicable alternative to the proposed construction in wetlands and

that the Selective North-South Alignment Alternative (preferred) includes all practicable measures to minimize harm to wetlands which may result from such use.

Mitigation

The contractor will be required to comply with NDDOT Standard Specification, Special Provisions, and plan details for sediment and erosion control. The contractor will be prohibited from disposing waste materials associated with the project in wetland areas. Replacing topsoil and seeding the disturbed areas to facilitate the establishment of vegetation, when each project segment is completed, will restore temporary construction zone impacts.

Efforts to avoid and minimize impacts to wetlands were considered and resulted in several design modifications. The remaining impacts are considered unavoidable and require compensatory mitigation. The wetland impacts requiring mitigation are based on the estimated acreage directly filled by construction. Actual impacts will be determined during the design phase. Wetland mitigation will consist of a minimum acre-for-acre replacement of filled or drained wetlands. During final design, consideration will be given to replacement by constructing or expanding wetlands within or adjacent to the ROW and constructing wetlands in borrow areas. Mitigation design details will be developed in conjunction with the development of roadway design of each segment. NDDOT and FHWA will review wetland impacts and mitigation details, throughout the design and permit review processes, with ND Game and Fish, USFWS, and ACOE. If an acceptable onsite plan cannot be developed, or only part of the acreage can be mitigated onsite, the project wetland impacts or remaining impacts will be mitigated offsite

When wetland impacts are greater than what can be mitigated on or near the project, creating or restoring wetlands at offsite locations will be used to mitigate the impacts. NDDOT is working on establishing wetland banks in all biotic regions of the state. The department is actively seeking bank sites in the Missouri Coteau where the majority of wetland impacts on this project will occur. Currently, one site

is being reviewed and others are being solicited. If offsite mitigation is required for the first phase, credits will initially be deducted from the Hillesland mitigation bank in Nelson County, ND (T150N, R 56W, Sec 19). As allowed in the Mitigation Bank Instrument, these credits will be transferred for deduction from a new bank closer to the project area once it is established.

Table 4-8. Project Segment Locations (Preliminary)

Segment Number	Description	Limits (MP–MP)	Length (Miles)	Year To Be Constructed	Total Wetlands ¹	Jurisdictional Wetlands ¹
1	Ray East to Near Jct. ND 40 (Tioga)	53-65	12	2004	2.70	1.51
2	2 Miles West of Berthold to 3 Miles West of Jct. US 52	121-131	10	2005	8.42	1.55
3	10 Miles East of Jct. US 85 East to Ray	43-53	10	2005	3.48	.43
4	Jct. US 85 East 10 Miles	33-43	10	2006	4.2	1.06
5	12 Miles West of Berthold to 2 Miles West of Berthold	111-121	10	2007	27.63	0
6	10 Miles East of Stanley to 12 Miles West of Berthold	101-111	10	2008	13.11	0
7	East of Stanley East 10 Miles	91-101	10	2009	6.12	.76
8	12 Miles East of Jct. 40 (Tioga) to West of Stanley	77-89	12	2010	9.16	0
9	Near Jct. 40 (Tioga) East 12 Miles	65-77	12	2011	5.02	1.66
Total Wetland Acreages					79.84	6.97

¹. Wetland impacts, based on the Select North-South Alignment Alternate (preferred).